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ABSTRACT

Presented are released science exercises from the National Assessment of Educational Progress in a loose-leaf format. Each exercise is followed by a documentation page that describes the objective being measured, mode of administration, age groups assessed, type of scoring, and national result. (CS)

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NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

Released Science Exercises

1972-73

September 1975

SE 032 898

NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

A Project of the

Education Commission of the States
1860 Lincoln Street, Suite 700
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September 1975

SCIENCE

RELEASED EXERCISES FROM THE 1972-73 ASSESSMENT

This packet of materials has been prepared for school personnel who are interested in reviewing National Assessment's released science exercises. We hope you find the loose-leaf format helpful during your review process -- feel free to reproduce additional sets. We would appreciate your comments on the content and arrangement of the packet so that we can continue to improve future packets of materials in other assessment areas. These materials are for your use and we certainly want to make them as usable as possible.

Since NAEP is not an everyday household word to everyone, we suggest that you carefully review all background and supplemental materials that are included with this mailing to become familiar with National Assessment's purpose and overall assessment model. It is possible that our assessment materials may not be totally suited to your particular assessment or program needs.

NOTE: Secondary users who plan to collect assessment data using NAEP's materials should be aware of certain data collection procedures which were followed. This is especially important if data comparisons are going to be made. While these procedures are discussed in more detail in the General Information Yearbook and the packet introduction section, they are presented here in outline form as a handy reminder.

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NAEP ASSESSMENT PROCEDURES

I. Mode of Administration
   A. Group Administered Exercises
   B. Individually Administered Exercises

II. Paced Tapes for Group Administrations

III. Age Groups Assessed
   A. 9-Year-Olds
   B. 13-Year-Olds
   C. 17-Year-Olds (both in and out-of-school)
   D. Adults (26-35)

IV. Assessment Periods
   A. 13-Year-Olds......October-December
   B. 9-Year-Olds......January-February
   C. 17-Year-Olds......March-May

   D. 17-Year-Olds (early graduates and dropouts) and Adults -- varying survey periods, request information from NAEP

V. Printing -- One Exercise Per Page

VI. Scoring
   A. Multiple-Choice Exercises
   B. Open-Ended Exercises

Also keep in mind that NAEP assessed these science exercises during 1972-73. To what extent this lapse in time would have on your assessment findings compared to NAEP findings is not known. However, some relative comparisons of student achievement outcomes should be able to be made.

In interpreting student achievement levels many school personnel have found it interesting and valuable to think in terms of...

> "How well might we expect our students to do?"
>
> "How well do we anticipate our students will actually do?"
>
> "How well did our students actually do?"

The released exercise packet is arranged in NAEP Number order. Please note that the packet does have a sequential page numbering system so that it could readily be put back into its present order. You may find it helpful to staple each exercise page(s), documentation page(s) and scoring guide page(s) together before you begin your review.

The example exercise in the packet introduction section should be carefully studied before reviewing the released exercises. Each exercise is followed by a documentation page that describes the objective being measured, mode of administration, age groups assessed, type of scoring and national results. Nearly 90% of the science exercises in this packet were first assessed during the 1969-70 assessment and then again during the 1972-73 assessment. Thus, data results from both assessments are shown for nearly all of the exercises.

The following tables were prepared to give an overview of the science released exercises in terms of "assessment coverage". The tables should be helpful in answering such questions as: "How long would it take to administer the 13-year-old exercises?" or "How long would it take to administer the 17-year-old group administered exercises?" or "How many physical science exercises are there for the 9-year-olds?" Table 5 gives a complete listing of every exercise and may be helpful as you proceed through your review and selection process.

We hope you keep us informed of your assessment activities. We encourage you to share with us your successes as well as any problems you experience with these materials so that we might better advise others.

Jack G. Schmidt State Assessment Consultant	Vern A. Achtermann Consultant, Assessment Services

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TABLE 1: NUMBER OF SCIENCE EXERCISES BY AGE LEVEL

There are a total of 175 exercises that were released after the 1972-73 science assessment. National Assessment often talks about the released exercises in terms of "unique" and "overlap" exercises. A unique exercise is one that was administered to only one age level; for example, only 9-year-olds. An overlap exercise is one that was administered to more than one age level; for example, to both 9- and 13-year-olds. An overlap exercise enables one to make data comparisons between two or more age levels for the same exercise task.

The table below shows the various combinations of unique and overlap exercises across the four age levels. The Line No. column on the left is for explanatory purposes only. For example, 56 exercises (Line No. 1) were administered to 9-year-olds only. Thirty-two (32) exercises (Line No. 2) were administered to 13-year-olds only. Line No.s 1-4 represent the unique exercises.

Now look at Line No. 5. Fourteen (14) exercises were administered to 9- and 13-year-olds -- thus, these are overlap exercises. Line No. 7 shows that there were 3 exercises that were administered to all four age levels.

Line No. 12 shows the total number of exercises that were administered to each age. The sum of these four figures will not be equal to the total 175 released exercises because of the overlap situation described above.

LINE NO.	AGE LEVEL				
	9	13	17	A	
1.	56				UNIQUE EXERCISES
2.		32			
3.			29		
4.				3	
5.	14	14			OVERLAP EXERCISES
6.	2	2	2		
7.	3	3	3	3	
8.		4	4		
9.		5	5	5	
10.			19	19	
11.		8		8	
12.	75	68	62	38	

TABLE 2: NUMBER OF SCIENCE EXERCISES BY AGE LEVEL SHOWING TYPE OF ADMINISTRATION AND TYPE OF SCORING

National Assessment's exercises are administered either in group sessions (usually about 12 students per session) or in individual sessions (one-to-one interview situation). There are also two general types of scoring -- multiple-choice and open-ended.

The two-way table below shows the number of exercises for each age level broken out by type of administration and type of scoring.

Age Level	Type of Administration	Type of Scoring Multiple-Choice	Open-End	Total
9-Year-Olds	Group	67	0	67
	Individual	0	8	8
	Total	67	8	75
13-Year-Olds	Group	55	5	60
	Individual	0	8	8
	Total	55	13	68
17-Year-Olds	Group	46	8	54
	Individual	0	8	8
	Total	46	16	62
Adults	Group	27	4	31
	Individual	0	7	7
	Total	27	11	38

TABLE 3: NUMBER OF SCIENCE EXERCISES BY AGE LEVEL SHOWING TYPE OF ADMINISTRATION, ADMINISTRATION TIMES AND TYPE OF SCORING FOR THE THREE MAJOR OBJECTIVE AREAS

One method of classifying the released science exercises is by major objective areas. The table on the next page shows the exercise coverage for each of the three major objectives:

OBJECTIVE I.	Know the Fundamental Aspects of Science
OBJECTIVE II.	Understand and Apply the Fundamental Aspects of Science in a Wide Range of Problem Situations
OBJECTIVE III.	Appreciate the Knowledge and Processes of Science, the Consequences and Limitations of Science, and the Personal and Social Relevance of Science and Technology in Our Society

A more detailed discussion of the science objectives and subobjectives can be found in the booklet, Science Objectives -- For 1972-73 Assessment.

The table also provides information on the type of administration and scoring as well as administration time (expressed in total minutes and seconds). For example, if one were only interested in assessing the Objective I exercises for 17-year-olds that were group administered and multiple-choice scored, there would be 20 exercises to review. The total administration time for these 20 exercises would be 13 minutes and 34 seconds.

An asterisk (*) in the table under the time column means no timing information is available. For the in-school ages the asterisk would apply to individually administered exercises where no paced tape was used. For adults, all exercises were administered individually in a one-to-one interview situation. The group administration mode for adults means that a tape was used to present the stimulus portion of the exercise but no time restriction was placed on the response portion.

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TABLE 3: NUMBER OF SCIENCE EXERCISES BY AGE LEVEL SHOWING TYPE OF ADMINISTRATION, ADMINISTRATION TIMES AND TYPE OF SCORING FOR THE THREE MAJOR OBJECTIVE AREAS

Age/Admin./Scoring	OBJ. I		OBJ. II		OBJ. III		TOTAL	
	No.	Time	No.	Time	No.	Time	No.	Time
A. 9-year-olds								
Group/Multiple Choice	27	27:33	37	39:32	3	2:43	67	69:48
Group/Open End	0	--	0	--	0	--	0	--
TOTAL	27	27:33	37	39:32	3	2:43	67	69:48
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	2	*	5	*	1	*	8	*
TOTAL	2	*	5	*	1	*	8	*
Total 9-year-old Exercises	29		42		4		75	
B. 13-year-olds								
Group/Multiple Choice	24	14:57	26	24:56	5	8:08	55	48:01
Group/Open End	0	--	1	2:01	4	9:31	5	11:32
TOTAL	24	14:57	27	26:57	9	17:39	60	59:33
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	2	*	5	*	1	*	8	*
TOTAL	2	*	5	*	1	*	8	*
Total 13-year-old Exercises	26		32		10		68	
C. 17-year-olds								
Group/Multiple Choice	20	13:34	21	21:11	5	10:36	46	45:21
Group/Open End	0	--	4	28:31	4	8:27	8	36:58
TOTAL	20	13:34	25	49:42	9	19:03	54	82:19
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	2	*	6	*	0	--	8	*
TOTAL	2	*	6	*	0	--	8	*
Total 17-year-old Exercises	22		31		9		62	
D. Adults								
Group/Multiple Choice	10	*	13	*	4	*	27	*
Group/Open End	0	--	2	*	2	*	4	*
TOTAL	10	*	15	*	6	*	31	*
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	2	*	3	*	2	*	7	*
TOTAL	2	*	3	*	2	*	7	*
Total Adult Exercises	12		18		8		38	

TABLE 4: NUMBER OF PHYSICAL AND BIOLOGICAL SCIENCE EXERCISES BY AGE LEVEL SHOWING TYPE OF ADMINISTRATION, ADMINISTRATION TIMES AND TYPE OF SCORING

The released science exercises are also classified by type of science, i.e., physical or biological science. The table on the next page shows the exercise coverage for each type. The table also provides information on the type of administration and scoring as well as administration time (expressed in total minutes and seconds).

For example, if one were only interested in assessing the physical science exercises for 13-year-olds that were group administered and multiple-choice scored, there would be 26 exercises to review. The total administration time for these 26 exercises would be 21 minutes and 18 seconds.

An asterisk (*) in the table under the time column means no timing information is available. For the in-school ages the asterisk would apply to individually administered exercises where no paced tape was used. For adults, all exercises were administered individually in a one-to-one interview situation. The group administration mode for adults means that a tape was used to present the stimulus portion of the exercise but no time restriction was placed on the response portion.

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TABLE 4: NUMBER OF PHYSICAL AND BIOLOGICAL SCIENCE EXERCISES BY AGE LEVEL SHOWING TYPE OF ADMINISTRATION, ADMINISTRATION TIMES AND TYPE OF SCORING

Age/Admin./Scoring	Physical Science		Biological Science		Unclassified		TOTAL	
	No.	Time	No.	Time	No.	Time	No.	Time
A. 9-year-olds								
Group/Multiple Choice	36	38:49	18	18:10	13	12:49	67	69:48
Group/Open End	0	--	0	--	0	--	0	--
TOTAL	36	38:49	18	18:10	13	12:49	67	69:48
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	7	*	1	*	0	--	8	*
TOTAL	7	*	1	*	0	--	8	*
Total 9-year-old Exercises	43		19		13		75	
B. 13-year-olds								
Group/Multiple Choice	26	21:18	18	13:33	11	13:10	55	48:01
Group/Open End	1	2:01	0	--	4	9:31	5	11:32
TOTAL	27	23:19	18	13:33	15	22:41	60	59:33
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	7	*	0	--	1	*	8	*
TOTAL	7	*	0	--	1	*	8	*
Total 13-year-old Exercises	34		18		16		68	
C. 17-year-olds								
Group/Multiple Choice	26	21:08	13	11:10	7	13:03	46	45:21
Group/Open End	3	20:12	1	8:19	4	8:27	8	36:58
TOTAL	29	41:20	14	19:29	11	21:30	54	82:19
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	8	*	0	--	0	--	8	*
TOTAL	8	*	0	--	0	--	8	*
Total 17-year-old Exercises	37		14		11		62	
D. Adults								
Group/Multiple Choice	9	*	14	*	4	*	27	*
Group/Open End	2	*	0	--	2	*	4	*
TOTAL	11	*	14	*	6	*	31	*
Individual/Multiple Choice	0	--	0	--	0	--	0	--
Individual/Open End	5	*	0	--	2	*	7	*
TOTAL	5	*	0	--	2	*	7	*
Total Adult Exercises	16		14		8		38	

TABLE 5: LISTING OF RELEASED SCIENCE EXERCISES

Table 5 on the next several pages lists all of the 175 released science exercises. The legend below will help to explain the table columns.

NAEP Number
The first digit indicates the major objective (1=I, 2=II, 3=III).
The third digit indicates the subobjective (1=A, 2=B, 3=C, etc.).

Release Number
Each exercise begins with an "R", indicating that they are all "released" exercises. The next letter indicates how the exercise is classified by type of science:

The RP series are physical science exercises.
The RB series are biological science exercises.
The RU series are unclassified exercises.

Administration
G = Group administered
I = Individually administered

Time
X:XX = Administration minutes and seconds
* = No time restriction

Scoring
MC = Multiple-choice
OE = Open-end

This master table may be useful in selecting certain types of exercises, such as only group administered/multiple-choice exercises that were administered to 13-year-olds or tabulating total administration time for selected exercises.

NOTE: Two of the individually administered exercises (101016 and 302014), while multiple-choice in format, have been coded in Table 5 as open-ended. If the administrators were not certain which response foil should be checked, they were instructed to write explanatory comments describing the solicited response. These comments need to be reviewed during scoring so that an appropriate response foil can be filled in by the scorers.

There are also five exercises that appear as age overlaps in Table 5 even though a slightly different exercise version was used at each age. These five exercises are 101153, 201070, 205018, 301011 and 303092. The different exercise versions for these five exercises are included in the packet. The appropriate version for each age is indicated by a circle around 1 (9-year-old), 2 (13-year-old), 3 (17-year-old) or 4 (adult) in the lower left-hand corner of each exercise page.

TABLE 5: LISTING OF RELEASED SCIENCE EXERCISES 9/75

NAEP Number	Release Number	9-year-olds			13-year-olds			17-year-olds			Adults		
		Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring	Admin	Time	Scoring
101016	RP260	I	*	OE	I	*	OE	I	*	OE	I	*	OE
101052	RP261	I	*	OE	I	*	OE	I	*	OE	I	*	OE
101064	RB101	G	1:01	MC									
101067	RP102	G	1:00	MC									
101068	RB103	G	1:00	MC									
101069	RP104	G	1:00	MC	G	:31	MC						
101070	RB105	G	1:01	MC									
101071	RP106	G	1:24	MC									
101072	RP107	G	1:00	MC									
101073	RP108	G	1:00	MC									
101074	RP109	G	1:00	MC									
101076	RP110	G	1:01	MC									
101077	RP111	G	1:01	MC									
101078	RB112	G	1:01	MC									
101079	RB113	G	1:01	MC									
101081	RB114	G	1:00	MC									
101083	RB115	G	1:00	MC									
101085	RB116	G	1:00	MC									
101087	RP117	G	1:00	MC									

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NAEP Number	Release Number	9-year-olds			13-year-olds			17-year-olds			Adults		
		Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring
101091	RP118	G	1:01	MC									
101093	RP119	G	1:00	MC									
101094	RB120	G	1:00	MC									
101096	RP121	G	1:00	MC									
101097	RP122	G	1:00	MC	G	:31	MC						
101099	RP123	G	1:00	MC									
101100	RB124	G	1:02	MC									
101102	RB125				G	:32	MC				G	*	MC
101103	RB126				G	:46	MC						
101105	RB127				G	:46	MC						
101108	RB128				G	:46	MC						
101109	RB129				G	1:02	MC				G	*	MC
101110	RP130				G	:31	MC				G	*	MC
101111	RP131				G	:31	MC						
101114	RB132				G	:32	MC						
101116	RB133				G	:46	MC	G	:42	MC			
101117	RP134				G	:31	MC						
101118	RP135				G	:31	MC						
101119	RP136				G	:31	MC						

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NAEP Number	Release Number	9-year-olds Admin.	9-year-olds Time	9-year-olds Scoring	13-year-olds Admin.	13-year-olds Time	13-year-olds Scoring	17-year-olds Admin.	17-year-olds Time	17-year-olds Scoring	Adults Admin.	Adults Time	Adults Scoring
101120	RP137				G	:45	MC						
101122	RB138				G	:32	MC						
101123	RP139				G	:46	MC	G	:46	MC			
101124	RP140				G	:32	MC						
101125	RB141				G	:31	MC				G	*	MC
101126	RB142				G	:46	MC						
101128	RP143				G	:31	MC						
101129	RP144				G	:45	MC						
101131	RB145							G	:30	MC			
101133	RB146							G	:30	MC			
101134	RB147							G	:45	MC	G	*	MC
101135	RB148							G	:45	MC	G	*	MC
101136	RP149							G	:45	MC			
101137	RP150							G	:31	MC			
101138	RP151							G	:30	MC			
101139	RP152							G	:31	MC			
101142	RP153							G	:46	MC			
101146	RP154							G	:47	MC			
101147	RP155							G	:31	MC			

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NAEP Number	Release Number	9-year-olds Admin.	9-year-olds Time	9-year-olds Scoring	13-year-olds Admin.	13-year-olds Time	13-year-olds Scoring	17-year-olds Admin.	17-year-olds Time	17-year-olds Scoring	Adults Admin.	Adults Time	Adults Scoring
101148	RB156							G	:46	MC	G	*	MC
101150	RP157							G	:30	MC			
101151	RP158							G	:30	MC			
101152	RP159							G	:45	MC			
101153	RP160							G	:45	MC	G	*	MC
101155	RB161										G	*	MC
101159	RU162							G	:59	MC			
102023	RP163							G	1:00	MC			
102030	RB164				G	:31	MC				G	*	MC
105009	RU165	G	1:00	MC									
105010	RU166	G	1:00	MC									
105012	RU167				G	:31	MC						
105015	RU168	G	1:00	MC									
201055	RP169	G	1:00	MC									
201056	RP170	G	1:00	MC									
201061	RP171	G	:59	MC									
201063	RP172	G	1:00	MC									
201065	RP173	G	1:00	MC									
201066	RB174	G	1:01	MC									

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NAEP Number	Release Number	9-year-olds			13-year-olds			17-year-olds			Adults		
		Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring
202080	RP192	G	1:01	MC									
202081	RP193	G	1:00	MC									
202083	RP194				G	:46	MC						
202084	RB195				G	:46	MC				G	*	MC
202085	RB196							G	1:14	MC			
202087	RB197							G	1:00	MC	G	*	MC
202088	RP198							G	1:01	MC			
202089	RP199							G	1:00	MC	G	*	MC
202090	RP200							G	1:29	MC			
202091	RP201							G	1:01	MC	G	*	MC
202092	RB202							G	:44	MC	G	*	MC
202093	RP203							G	:59	MC			
202094	RB204										G	*	MC
202102	RP205	G	1:01	MC	G	1:01	MC						
202106	RP206	G	1:00	MC	G	1:01	MC						
203022	RB207				G	1:15	MC	G	1:15	MC			
203023	RP208				G	:47	MC						
204001	RP263	I	*	OE	I	*	OE	I	*	OE			
204002	RP264	I	*	OE									

NAEP Number	Release Number	9-year-olds			13-year-olds			17-year-olds			Adults		
		Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring
204004	RP265	I	*	OE	I	*	OE	I	*	OE			
204029	RP255	I	*	OE	I	*	OE						
204036	RP266							I	*	OE	I	*	OE
204046	RP267				I	*	OE	I	*	OE	I	*	OE
204068	RP256	G	2:54	MC	G	2:41	MC						
204073	RP209				G	:45	MC						
204075	RP210							G	1:00	MC			
204076	RB211	G	1:00	MC									
204077	RP212	G	1:00	MC									
204078	RP213	G	1:25	MC									
204081	RP214	G	:59	MC									
204083	RP215	G	:59	MC									
204084	RP216	G	1:00	MC									
204086	RU217	G	1:00	MC									
204087	RB218	G	1:00	MC									
204088	RB219	G	1:00	MC									
204089	RP220	G	:59	MC									
204090	RU221	G	1:25	MC									
204091	RB222	G	1:00	MC									

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NAEP Number	Release Number	9-year-olds			13-year-olds			17-year-olds			Adults		
		Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring	Admin.	Time	Scoring
204092	RP223				G	1:16	MC						
204095	RB224				G	:46	MC						
204096	RP225				G	1:16	MC						
204097	RU226				G	:46	MC						
204100	RP227				G	:46	MC						
204102	RU228							G	1:28	MC			
204103	RU229							G	1:00	MC	G	*	MC
204105	RP230							G	1:14	MC			
204106	RP231							G	1:00	MC			
204107	RB249							G	8:19	OE			
204109	RP250							G	8:06	OE	G	*	OE
204110	RP251							G	10:07	OE			
204111	RB232							G	1:14	MC			
204112	RP252							I	*	OE			
204113	RU233	G	1:00	MC	G	1:00	MC						
204124	RP234	G	1:00	MC	G	1:01	MC						
204128	RB235	G	1:00	MC									
204137	RB236	G	1:01	MC	G	1:01	MC						
205014	RP257				G	2:01	OE	G	1:59	OE	G	*	OE

NAEP Number	Release Number	9-year-olds Admin.	9-year-olds Time	9-year-olds Scoring	13-year-olds Admin.	13-year-olds Time	13-year-olds Scoring	17-year-olds Admin.	17-year-olds Time	17-year-olds Scoring	Adults Admin.	Adults Time	Adults Scoring
205016	RU237	G	1:00	MC									
205018	RU238	G	1:00	MC	G	:46	MC						
205021	RU239				G	:46	MC						
205027	RU240	G	1:00	MC	G	1:01	MC						
301009	RU268				G	1:54	OE						
301010	RU241				I	*	OE						
301011	RU242							G	1:58	OE	I	*	OE
302002	RU269				G	1:29	OE	G	1:29	OE	G	*	OE
302011	RU270				G	1:00	MC	G	1:02	MC			
302014	RB243	I	*	OE									
302015	RB244				G	:30	MC						
303009	RU271				G	4:46	MC	G	4:39	MC	G	*	MC
303033	RB272							G	1:00	MC	G	*	MC
303042	RU273							G	4:30	OE	G	*	OE
303065	RU274							G	1:18	MC	G	*	MC
303070	RU276							G	2:37	MC	G	*	MC
303072	RU275	G	1:48	MC	G	1:21	MC						
303085	RU245	G	:25	MC									
303087	RU246	G	:30	MC									

NAEP Number	Release Number	9-year-olds Admin.	9-year-olds Time	9-year-olds Scoring	13-year-olds Admin.	13-year-olds Time	13-year-olds Scoring	17-year-olds Admin.	17-year-olds Time	17-year-olds Scoring	Adults Admin.	Adults Time	Adults Scoring
303089	RU247				G	:31	MC						
303090	RU258				G	2:01	OE						
303091	RU253				G	4:07	OE						
303092	RU248							G	:30	OE	I	*	OE

Introduction to Released Science Exercises

1972-73

When the United States Office of Education was founded in 1867, one charge set before its commissioner was to determine the nation's progress in education. Only recently has that century-old charge been addressed in a systematic way. This work is being done by the National Assessment of Educational Progress (NAEP).

Each year since 1969 NAEP has gathered census-like information about levels of educational achievement across the country and reported its findings to the nation. During the first five years of its endeavors, National Assessment has interviewed and tested more than 400,000 representative young Americans. Baseline data on the achievement levels of young Americans in eight learning areas--science, social studies, music, literature, reading, writing, mathematics and citizenship--have been collected and reported.

NAEP has now completed two major assessments of science. The first took place in the 1969-70 school year, and the second occurred in the 1972-73 school year. Approximately half of the questions asked in 1969-70 were repeated in 1972-73. Using the same exercises again in a controlled manner, NAEP has been able to measure the changes in achievement between the two science assessments. Most of the exercises measuring change are being released to the public for the first time. In addition to the change exercises included in the 1972-73 science assessment, a new set of exercises was administered, most of which are not being released to the public. These unreleased, new 1972-73 science exercises will be used in the third assessment of science.

This volume provides documentation and selected data on science exercises released after the 1972-73 assessment. The documentation includes a copy of the exercise, its identification numbers, the objectives being measured, timing information and a description of the exercise by format, scoring methods, administration mode and type of science. Scoring guides for open-ended exercises are also included. If the exercise was also administered in 1969-70, appropriate information for that year is also included. Researchers who need detailed information and state and local districts that want to use individual NAEP exercises in their own assessment programs will find this documentation most useful.

The next few pages explain how to read the documentation pages and scoring guides.

SAMPLE EXERCISE DOCUMENTATION

Each year the Earth moves once around

- ○ Mars.
- ○ Venus.
- ● the Sun.
- ○ the Moon.
- ○ all of the other planets.

- ○ I don't know.

NAEP #: 101069

72-73 Report #: RP104
69-70 Report #: U632, U708

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	03-05	04-33
69-70 Package-Exercise:	02-06	07-03
72-73 National P-val: RP104	66.66	75.51
69-70 National P-value: RP104	66.51	82.52
Timing: (in seconds)		
Stimulus:	9	9
Response:	40	11
I don't know:	5	5
Pause:	6	6
RP104 Exercise total:	60	31

I. EXERCISE IDENTIFICATION NUMBERS

NAEP #: 101069

Exercises in this volume are ordered by NAEP number, an identification number unique to each exercise. The 1972-73 objective and subobjective are coded in the first and third digits. The last three digits are simply a sequence number within the objective and subobjective.

72-73 Rpt. #: RP104

The first letter indicates its 1972-73 release status. "R" indicates it is a released exercise. The next letter indicates how the exercise is classified by type of science: P for physical science, B for biological science and U for unclassified. The three numbers are a sequence number.

69-70 Rpt. #: U632, U708

In the 1969-70 science assessment, report numbers were assigned by age level. In this example, the exercise was administered at two age levels and has two report numbers. For each report number, the first letter indicates its 1969-70 release status. "U" indicates that it was unreleased. The three numbers are a sequence number within each age.

II. OBJECTIVES AND SUBOBJECTIVES

72-73 Obj:	I.	KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective:	A.	Know facts and simple concepts.
69-70 Obj:	I.	KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Each change exercise was written to measure one of the 1969-70 objectives. When the objectives were revised for the 1972-73 assessment, the repeated exercises were matched with the new objectives and subobjectives. The new exercises written specifically for the 1972-73 assessment were written to measure the 1972-73 objectives.

Booklets describing the two sets of objectives and their development are available from the U.S. Government Printing Office.

III. EXERCISE DESCRIPTORS

Type of science: Physical science

Each exercise was classified by type of science: P for physical science, B for biological science and U for unclassified. This classification is also found in the 1972-73 Rpt. number.

Exercise Type: Multiple choice

The exercise type describes the exercise format: multiple choice, open-ended, short answer, and so on.

Scoring Type: Machine

Most exercises were scored by an optical-scanner machine. For answers written by the respondents, professional and semi-professional scoring done by hand was used.

Administration Mode: Group

The mode of administration indicates the setting in which the exercise was administered: in groups (usually of size 12) or individually (one respondent with one administrator). All exercises administered to adults were administered individually.

IV. PACKAGING

	9	13
72-73 Package-Exercise:	03-05	04-33
69-70 Package-Exercise:	02-06	07-03

This information tells how exercises were grouped into booklets or packages in each assessment. For example, in 1972-73 this exercise was administered to 9-year-olds in package 3; it was the fifth exercise in that package. Each in-school respondent took only one package of exercises; adults were allowed to take up to four packages.

V. NATIONAL PERFORMANCE VALUES

72-73 National P-value:
RP104

69-70 National P-value:
RP104

Since NAEP uses national probability samples, these national p-values are estimates of the proportion of people at a given age who would complete the exercise acceptably. Each p-value is estimated, using a weighting procedure, from the obtained percentage of respondents at each age level who answered the exercise acceptably.

It should be noted that data reported here for 17-year-olds is based on only those respondents attending schools at the time of the assessment. Although NAEP did assess out-of-school 17-year-olds, their results are not being reported here.

For multi-part exercises, national p-values are presented for each part where an acceptable response or correct key has been determined. On a few exercises acceptable and unacceptable p-values are not yet available.

On open-ended exercises, the national p-values are based on the proportion of respondents making acceptable responses, as explained in the scoring guides. Scoring guides for the open-ended exercises are included in this volume.

VI. ADMINISTRATION TIMES

Timing: (in seconds)
Stimulus:
Response:
I don't know:
Pause:
RP104 Exercise Total:

Timing information is based on the tape recordings used in the group administrations of the exercises. The stimulus time is the time required to read the entire exercise, including the alternative responses. The response time is the period of silence on the tape that allows the respondents to record their answers. After the response time there is a five-second interval during which respondents are told, "If you do not know the answer, please fill in the oval beside 'I don't know.'" There is a six-second pause before the announcer goes on to the next exercise. The exercise total is the total elapsed time required to administer the exercise.

On open-ended exercises much longer response times were used to allow respondents ample time to respond to the exercise.

For adults, a paced tape was used only to read the exercise; time to respond was not limited by the tapes.

Notes on the Use of NAEP Science Scoring Guides

NAEP categorizes responses to open-ended questions according to a very simple scheme. Responses to most open-ended questions are given a two-digit score. Acceptable responses are categorized in the teens; up to ten categories (10-19) are possible. Unacceptable responses are scored in the twenties. When more than ten acceptable or unacceptable categories are anticipated, three-digit codes are used. In that case, 100's are acceptable; 200's are unacceptable. When only the simplest scheme is needed, one digit suffices. In this case, acceptable responses are 1's; unacceptable responses are 2's.

If an ordering of acceptability is possible with two- or three-digit codes, lower numbers in the teens or 100's are more acceptable than higher numbers. This ordering is often rather arbitrary and sometimes breaks down. For example, once scoring is underway, we occasionally find a highly acceptable response and make a new category following the old ones, that is, with a larger number. Unacceptable responses generally are not ordered. A "no response" is coded 0, 00, or 000. "I don't know" is coded 9, 39, or 399.

Some of the exercises in this set followed different schemes. For example, exercises 204109 and 204110 use two columns of ovals: the first column is used for the quality of the response and the second for the type of idea expressed. In cases like these the acceptability of the responses was coded using a combination of these two columns. Later, these two-column responses were recoded to conform with the general format described above. The ranges of acceptable and unacceptable responses are noted on these scoring guides.

Acceptability of responses is not absolutely fixed. The scoring guides were reviewed by science experts whose comments were incorporated in the present versions of the guides. If the need arises, we can treat as unacceptable any category in the teens or as acceptable any in the twenties, although we are a bit hesitant to make drastic changes after scoring.

P-values on open-ended exercises are calculated from the number of respondents making acceptable responses, as determined using the categories provided by the scoring guides. For example, on exercises with two-digit scores, the national p-value would be based on all those respondents whose answers were categorized 10 through 19.

1972-73 Science Released Exercises

NAEP #	Release #
101016	RP260
101052	RP261
101064	RB101
101067	RP102
101068	RB103
101069	RP104
101070	RB105
101071	RP106
101072	RP107
101073	RP108
101074	RP109
101076	RP110
101077	RP111
101078	RB112
101079	RB113
101081	RB114
101083	RB115
101085	RB116
101087	RP117
101091	RP118
101093	RP119
101094	RB120
101096	RP121
101097	RP122
101099	RP123
101100	RB124
101102	RB125
101103	RB126
101105	RB127
101108	RB128
101109	RB129
101110	RP130
101111	RP131
101114	RB132
101116	RB133
101117	RP134
101118	RP135
101119	RP136
101120	RP137
101122	RB138
101123	RP139
101124	RP140
101125	RB141
101126	RB142
101128	RP143
101129	RP144
101131	RB145

NAEP #	Release #
101133	RB146
101134	RB147
101135	RB148
101136	RP149
101137	RP150
101138	RP151
101139	RP152
101142	RP153
101146	RP154
101147	RP155
101148	RB156
101150	RP157
101151	RP158
101152	RP159
101153	RP160
101155	RB161
101159	RU162
102023	RP163
102030	RB164
105009	RU165
105010	RU166
105012	RU167
105015	RU168
201055	RP169
201056	RP170
201061	RP171
201063	RP172
201065	RP173
201066	RB174
201067	RP175
201068	RP176
201069	RP177
201070	RP178
201071	RB179
201072	RP180
201073	RP181
201075	RP182
201078	RP183
201079	RP184
201080	RB185
201082	RP186
201083	RP187
201085	RP188
201086	RP189
201104	RB190
202047	RU254
202049	RP262

NAEP #	Release #
202078	RP191
202080	RP192
202081	RP193
202083	RP194
202084	RB195
202085	RB196
202087	RB197
202088	RP198
202089	RP199
202090	RP200
202091	RP201
202092	RB202
202093	RP203
202094	RB204
202102	RP205
202106	RP206
203022	RB207
203023	RP208
204001	RP263
204002	RP264
204004	RP265
204029	RP255
204036	RP266
204046	RP267
204068	RP256
204073	RP209
204075	RP210
204076	RB211
204077	RP212
204078	RP213
204081	RP214
204083	RP215
204084	RP216
204086	RU217
204087	RB218
204088	RB219
204089	RP220
204090	RU221
204091	RB222
204092	RP223
204095	RB224
204096	RP225
204097	RU226
204100	RP227
204102	RU228
204103	RU229
204105	RP230
204106	RP231
204107	RB249
204109	RP250

NAEP #	Release #
204110	RP251
204111	RB232
204112	RP252
204113	RU233
204124	RP234
204128	RB235
204137	RB236
205014	RP257
205016	RU237
205018	RU238
205021	RU239
205027	RU240
301009	RU268
301010	RU241
301011	RU242
302002	RU269
302011	RU270
302014	RB243
302015	RB244
303009	RU271
303033	RB272
303042	RU273
303065	RU274
303070	RU276
303072	RU275
303085	RU245
303087	RU246
303089	RU247
303090	RU258
303091	RU253
303092	RU248

Science Change Released Exercises
1969-70 and 1972-73

NAEP #	1972-73 Release Number	1969-70 Release Numbers		
		9	13	17
101064	RB101	U607		
101067	RP102	U648		
101068	RB103	R134		
101069	RP104	U632	U708	
101070	RB105	U628		
101071	RP106	U603		
101072	RP107	U646		
101073	RP108	U635		
101074	RP109	U609		
101076	RP110	U616		
101077	RP111	U636		
101078	RB112	U610		
101079	RB113	U641		
101081	RB114	U615		
101083	RB115	U611		
101085	RB116	U655		
101087	RP117	U657		
101091	RP118	U622		
101093	RP119	U619		
101094	RB120	U601		
101096	RP121	U605		
101097	RP122	U624	U703	
101099	RP123	U639		
101100	RB124	U647		
101102	RB125		U718	
101103	RB126		U727	
101105	RB127		U711	
101108	RB128		U706	
101109	RB129		U731	
101110	RP130		U710	
101111	RP131		U742	
101114	RB132		U713	
101116	RB133		U743	U820
101117	RP134		U735	
101118	RP135		U705	
101119	RP136		U715	
101120	RP137		U723	
101122	RB138		U707	
101123	RP139		U747	U843
101124	RP140		U725	
101125	RB141		U720	
101126	RB142		U736	
101128	RP143		U739	
101129	RP144		U717	
101131	RB145			U814

NAEP #	1972-73 Release Number	1969-70 Release Numbers		
		9	13	17
101133	RB146			U804
101134	RB147			U826
101135	RB148			U809
101136	RP149			U847
101137	RP150			U817
101138	RP151			U822
101139	RP152			U816
101142	RP153			U832
101146	RP154			U806
101147	RP155			R337
101148	RB156			R330
101150	RP157			U823
101151	RP158			U802
101152	RP159			U844
101153	RP160			U828
101155	RB161			
101159	RU162			U867
102023	RP163			U819
102030	RB164		U740	
105009	RU165	U677		
105010	RU166	U678		
105012	RU167		U772	
105015	RU168	U674		
201055	RP169	U614		
201056	RP170	U631		
201061	RP171	U645		
201063	RP172	U612		
201065	RP173	U654		
201066	RB174	U625		
201067	RP175	R141		
201068	RP176	U650		
201069	RP177	U651		
201070	RP178		U732	
201071	RB179		U730	
201072	RP180		R206	
201073	RP181		U746	U830
201075	RP182			U840
201078	RP183			U846
201079	RP184			U813
201080	RB185			U812
201083	RP187			
201085	RP188	U673		
201086	RP189		U726	
201104	RB190		R225	
202078	RP191	U620		
202080	RP192	U629		
201081	RP193	U626		
202083	RP194		U716	
202084	RB195		R228	

NAEP #	1972-73 Release Number	1969-70 Release Numbers 9	13	17
202085	RB196			U824
202087	RB197			U845
202088	RP198			U811
202089	RP199			U849
202090	RP200			U851
202091	RP201			U836
202092	RB202			U801
202093	RP203			U838
202094	RB204			
202102	RP205		R232	
202106	RP206	R135		
203022	RB207		R222	R314
203023	RP208		U734	
204073	RP209		U712	
204075	RP210			U841
204076	RB211	U660		
204077	RP212	U664		
204078	RP213	U672		
204081	RP214	U671		
204083	RP215	U663		
204084	RP216	U668		
204086	RU217	U661		
204087	RB218	U658		
204088	RB219	R151		
204089	RP220	U669		
204090	RU221	R147		
204091	RB222	U665		
204092	RP223		U757	
204095	RB224		U750	
204096	RP225		U751	
204097	RU226		U759	
204100	RP227		U754	
204102	RU228			U858
204103	RU229			U855
204105	RP230			U853
204106	RP231			U864
204107	RB249			U880
204109	RP250			U881
204110	RP251			U882
204111	RB232			R347
204112	RP252			R339
204113	RU233	U676		
204124	RP234	R146		
204128	RB235	R148		
204137	RB236	R133		
205016	RU237	U675		
205018	RU238	R157	R242	
205021	RU239		U769	
205027	RU240	R159		

NAEP #	1972-73 Release Number	1969-70 Release Numbers 9	13	17
301009	RU268		U780	
301010	RU241		U774	
301011	RU242			U869
302014	RB243	U686		
302015	RB244		U771	
303085	RU245	U684		
303087	RU246	U682		
303089	RU247		U773	
303090	RU258		U775	
303091	RU253		U782	
303092	RU248			U870

Geology is the science which studies the Earth, the rocks of which it is made up, and the changes which take place at and beneath the surface.

Take out Handout Number 7: 2 foam rubber blocks. Pick up one of the foam rubber blocks and twist it to show respondent that it is resilient and can be deformed without harm. Place foam blocks side by side, touching each other and lined up evenly, in front of respondent like this:

A. The foam sheets represent a layer of rock in the Earth's crust. Use one or both of the foam blocks to demonstrate faulting of the Earth's crust; that is, show me a fault.

Refer to page 3 to judge respondent's demonstration.

○ Correct demonstration

○ Incorrect demonstration

○ I don't know.

○ Did not attempt demonstration

RP260

(Continued)

B. Use one or both of these foam blocks to demonstrate a fold in the Earth's crust.

Refer to page 3 to judge respondent's demonstration.

- ○ Correct demonstration
- ○ Incorrect demonstration

- ○ I don't know.
- ○ Did not attempt demonstration

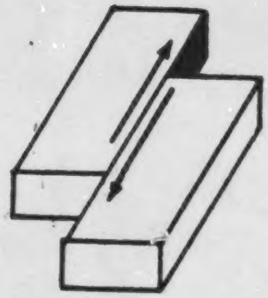
○ Apparatus failed.

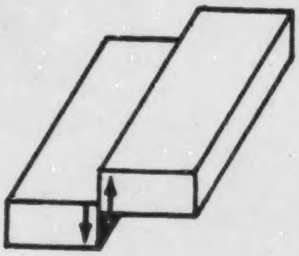
RP260

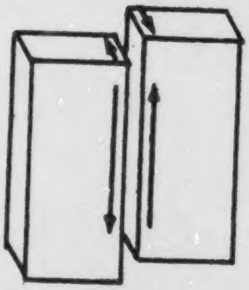
ILLUSTRATIONS FOR EXERCISE

Part A: Faulting

Correct demonstration of a fault in the Earth's crust is illustrated below. Any of the relative positions of the two foam pieces shown will be acceptable; that is. respondent may offset them horizontally, vertically, or obliquely, as long as he moves the edge of one piece along the edge of the other. Any number of directions and amounts of displacement are possible, and any flat surface of the foam pieces may be used as the edge of the fault.



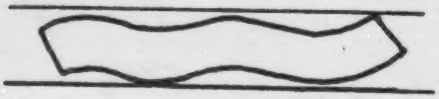


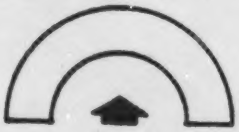


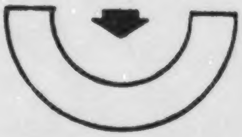
Part B: Folding

Correct demonstration of a fold in the Earth's crust is illustrated below. Any curved position of the foam piece will be acceptable; that is, respondent may arch the top surface upward or downward or wrinkle it into several small folds, as long as he shortens its length by curving its top surface. It is perfectly all right for him to hold the two pieces together in layers as he does this.

CORRECT DEMONSTRATIONS

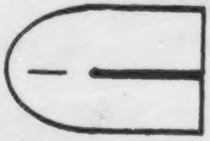






NOTE: A complete fold of the foam piece such that its inner surfaces touch tightly together is not correct. While it is technically possible, it most likely indicates that the respondent is guessing on the basis of the common definition of the term "to fold." This type of incorrect response is illustrated below.

INCORRECT DEMONSTRATION



RP260

8-181018-1/2/3/4

NAEP #: 101016

72-73 Report #: RP260

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Semi-professional
Administration Mode: Individual

Age:	9	13	17IS	Adult
72-73 Package-Exercise:	10-09	10-03	14-04	08-10
72-73 National P-val:				
RP260A	4.40	19.83	33.63	31.65
RP260B	16.00	22.16	32.48	30.14

Timing: No paced tape was used in this individually administered exercise.

Place Handout Number 30: 3 rock specimens, in front of respondent in 1, 2, 3 order.

Do not identify the rocks by name.

A. Which one of these rocks was MOST likely formed under water?

○ Rock 1 (Go to B)

○ Rock 2 (Go to B)

○ Rock 3 (Go to B)

○ I don't know. (End the exercise)

P1: If respondent hesitates say, "SHOW ME THE ROCK WHICH WAS PROBABLY MADE UNDER WATER." ○

○ No response (If no response after probe, end the exercise.)

B. Why did you choose the rock you chose?

____

____

____

____

____

P2: If respondent says, "Because it is sandstone," "because it is granite." or words to that effect ask, "WHY DID YOU CHOOSE SANDSTONE (GRANITE)?"

		B	
NP	○	○	○
P2	○	○	○
0	○	○	○
		○	○
			○
			○
			○
			○
			○
			○

RP251

8-101052-1,2,3,4

NAEP #: 101052

72-73 Report #: RP261

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Professional
Administration Mode: Individual

Age:	9	13	17IS	Adult
72-73 Package-Exercise:	09-12	11-01	12-01	08-01
72-73 National P-val:				
RP261A	59.70	71.25	77.83	72.39
RP261B	6.99	15.85	25.26	22.47

Timing: No paced tape was used in this individually administered exercise.

Exercise 101052-1,2,3,4; RP 261

A. Which one of these rocks was MOST likely formed under water?

B. Why did you choose the rock you chose?

00 = no response

Acceptable

10 = Acceptable reason

Because of the layers.
Because it looks like sandstone or limestone. Because it has lines in it and looks like it's made of sand.
Looks like sand, has different layers.
Because it has different layers and it looks like mud & sand & stuff.
Because you can see the layers of deposits made by the water.
Because of the smoothness. It looks as if it's been worn down and it's got those neat little lines in it.

11 = High level acceptable reason

Because it's made of sediments.
When the rains came down from the mountains, it tock sand & gravel with it to form sedimentary layers.
It looks like sand & mud had fallen down - it looks like a sedimentary rock - it's grainy.
Because of the layers. It looks like sediment.
It looks like it is has sediment lines in it.
It is a segmental rock - others are indigenous rocks.

- -

Unacceptable

20 = Unacceptable reason

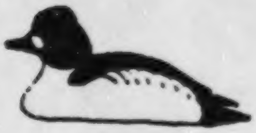
It looks like a sea rock. Looks like it might be made out of sand.
Cause it looks like it was formed in the sea.
Because it looks like it. It's shaped like it was formed by water.
Because it looks like water spots and rust spots.
Because I can tell that it is sand stone and that it's made under water; sand is in the water & the water packs it.

Note: Category 20 includes any reason when the wrong rock (2 or 3) was chosen.

39 = I don't know

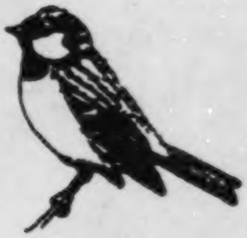
Which of these birds CANNOT fly?

A



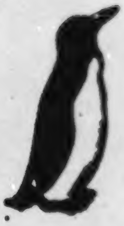
Duck

B



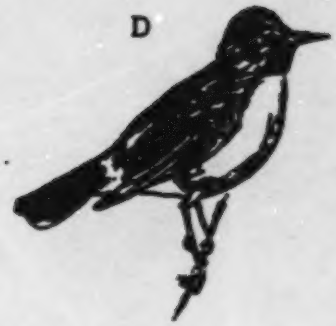
Sparrow

C



Penguin

D



Robin

○ A

○ B

● C

○ D

○ I don't know.

R8101

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101064

72-73 Report #: RB101
69-70 Report #: U607

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	03-10
69-70 Package-Exercise:	01-02

72-73 National P-val:
RB101 91.58
69-70 National P-value:
RB101 91.96

Timing: (in seconds)
Stimulus: 9
Response: 41
I don't know: 5
Pause: 6
RB101 Exercise total: 61

Chemistry is often called the study of

○ animals.
● matter.
○ plants.
○ soil.

○ I don't know.

RP102

23 STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101067

72-73 Report #: RP102
69-70 Report #: U648

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-07
69-70 Package-Exercise: 01-13

72-73 National P-val:
RP102 40.98
69-70 National P-value:
RP102 37.57

Timing: (in seconds)
Stimulus: 7
Response: 42
I don't know: 5
Pause: 6
RP102 Exercise total: 60

Which of the following insects spread serious human diseases?

○ Ants

○ Honeybees

● Houseflies

○ Moths

○ I don't know.

RB103

25 STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101068

72-73 Report #: RB103
69-70 Report #: R134

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 02-27
69-70 Package-Exercise: 02-04

72-73 National P-val:
RB103 45.49
69-70 National P-value:
RB103 45.98

Timing: (in seconds)
Stimulus: 10
Response: 39
I don't know: 5
Pause: 6
RB103 Exercise total: 60

Each year the Earth moves once around

○ Mars.

○ Venus.

● the Sun.

○ the Moon.

○ all of the other planets.

○ I don't know.

RP104

27 STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101069

72-73 Report #: RP104
69-70 Report #: U632, U708

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

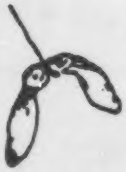
Age:	9	13
72-73 Package-Exercise:	03-05	04-33
69-70 Package-Exercise:	02-06	07-03
72-73 National P-val: RP104	66.66	75.51
69-70 National P-value: RP104	66.51	82.52

Timing: (in seconds)

	Stimulus:	9	9
	Response:	40	11
	I don't know:	5	5
	Pause:	6	6
RP104	Exercise total:	60	31

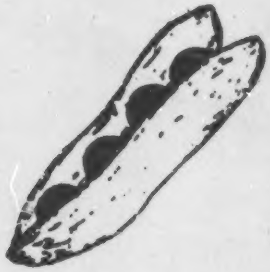
Sometimes seeds stick to animals and are carried to new places where they will later grow. Which of these seeds would most likely be spread this way?

A.



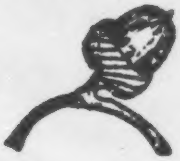
Maple Seed

B.



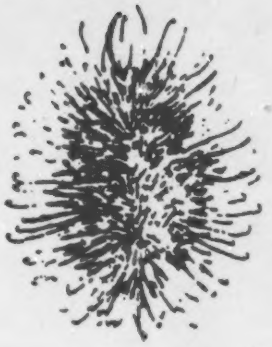
Bean Pod

C.



Acorn

D.



Cocklebur

○ A

○ B

○ C

RSIDS ● D

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101070

72-73 Report #: RB105
69-70 Report #: U628

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-12
69-70 Package-Exercise:	02-16
72-73 National P-val:	
RB105	61.93
69-70 National P-value:	
RB105	69.50

Timing: (in seconds)

	Stimulus:	15
	Response:	35
	I don't know:	5
	Pause:	6
RB105	Exercise total:	61

Which of the following is hottest?

○ Earth
○ Mars
○ The Moon
● The Sun

○ I don't know.

RP10G

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101071

72-73 Report #: RP106
69-70 Report #: U603

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-06
69-70 Package-Exercise:	03-01

72-73 National P-val:	
RP106	95.35
69-70 National P-value:	
RP106	95.12

Timing: (in seconds)

	Stimulus:	6
	Response:	67
	I don't know:	5
	Pause:	6
RP106	Exercise total:	84

Physics is the study of

○ war and peace.
○ wood and cloth.
● energy and matter.
○ plants and animals.

○ I don't know.

RP107

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101072

72-73 Report #: RP107
69-70 Report #: U646

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 03-15
69-70 Package-Exercise: 03-03

72-73 National P-val:
RP107 37.82
69-70 National P-value:
RP107 38.63

Timing: (in seconds)
Stimulus: 9
Response: 40
I don't know: 5
Pause: 6
RP107 Exercise total: 60

The tiny grains of sand on the beach are

● pieces of rock.

○ drops of water.

○ crystals of salt.

○ splinters of wood.

○ I don't know.

RP108

35

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101073

72-73 Report #: RP108
69-70 Report #: U635

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-25
69-70 Package-Exercise:	03-04

72-73 National P-val:
RP108 53.88
69-70 National P-value:
RP108 61.91

Timing: (in seconds)
Stimulus: 9
Response: 40
I don't know: 5
Pause: 6
RP108 Exercise total: 60

You could measure the distance from your home to the school in yards or in

○ dozens.
● feet.
○ pounds.
○ quarts.

○ I don't know.

RP109

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101074

72-73 Report #: RP109
69-70 Report #: U609

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-17
69-70 Package-Exercise:	03-12
72-73 National P-val:	
RP109	85.61
69-70 National P-value:	
RP109	89.14

Timing: (in seconds)

	Stimulus:	10
	Response:	39
	I don't know:	5
	Pause:	6
RP109	Exercise total:	60

Electricity can be used for all of the following EXCEPT

● taking walks.
○ cooking food.
○ heating homes.
○ lighting rooms.

○ I don't know.

RP110

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101076

72-73 Report #: RP110
69-70 Report #: U616

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	03-31
69-70 Package-Exercise:	03-16

72-73 National P-val:
RP110 76.58
69-70 National P-value:
RP110 80.27

Timing: (in seconds)

	Stimulus:	10
	Response:	40
	I don't know:	5
	Pause:	6
RP110	Exercise total:	61

Putting sand and salt together makes

○ a chemical.

○ a compound.

○ an element.

● a mixture.

○ a solution.

○ I don't know.

RP111

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101077

72-73 Report #: RP111
69-70 Report #: U636

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	03-28
69-70 Package-Exercise:	03-17
72-73 National P-val:	
RP111	61.73
69-70 National P-value:	
RP111	61.50

Timing: (in seconds)

	Stimulus:	9
	Response:	41
	I don't know:	5
	Pause:	6
RP111	Exercise total:	61

Which animal eats only plants?

○ Cat

○ Dog

○ Lion

● Rabbit

○ I don't know.

R8112

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101078

72-73 Report #: RB112
69-70 Report #: U610

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 03-19
69-70 Package-Exercise: 04-01

72-73 National P-val:
RB112 92.68
69-70 National P-value:
RB112 87.66

Timing: (in seconds)
Stimulus: 7
Response: 43
I don't know: 5
Pause: 6
RB112 Exercise total: 61

Germs sometimes cause disease in man because germs

- ● make poisons.
- ○ keep the blood from moving.
- ○ use up all of the water in the body.
- ○ dislike people and want to hurt them.

- ○ I don't know.

RB113

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101079

72-73 Report #: RB113
69-70 Report #: U641

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

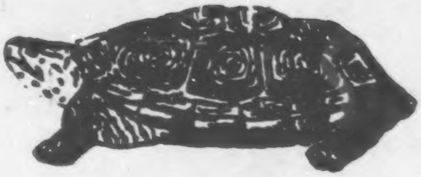
Age:	9
72-73 Package-Exercise:	03-23
69-70 Package-Exercise:	04-04
72-73 National P-val:	
RB113	47.60
69-70 National P-value:	
RB113	49.17

Timing: (in seconds)

	Stimulus:	14
	Response:	36
	I don't know:	5
	Pause:	6
RB113	Exercise total:	61

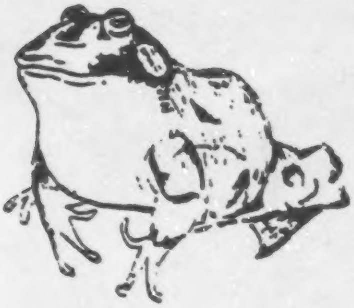
Which of the following animals has scales over most of its body?

A



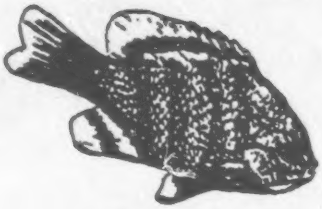
Turtle

B



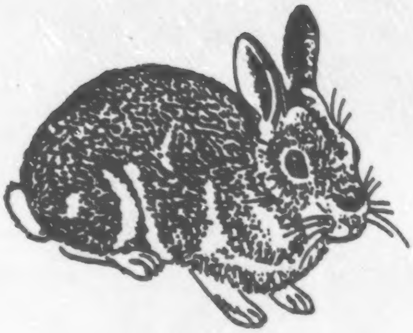
Frog

C



Fish

D



Rabbit

○ A

○ B

● C

RB114 ○ D

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101081

72-73 Report #: RB114
69-70 Report #: U615

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	05-02
69-70 Package-Exercise:	04-09

72-73 National P-val:
RB114 75.68
69-70 National P-value:
RB114 80.89

Timing: (in seconds)
Stimulus: 9
Response: 40
I don't know: 5
Pause: 6
RB114 Exercise total: 60

Which of the following animals usually hunts for food only at night?

● Bat

○ Dog

○ Horse

○ Hummingbird

○ I don't know.

RE115

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101083

72-73 Report #: RB115
69-70 Report #: U611

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 02-20
69-70 Package-Exercise: 05-01

72-73 National P-val:
RB115 86.87
69-70 National P-value:
RB115 87.18

Timing: (in seconds)
Stimulus: 9
Response: 40
I don't know: 5
Pause: 6
RB115 Exercise total: 60

What is the main way that sweating helps your body?

- ● It helps cool your body.
- ○ It keeps your skin moist.
- ○ It keeps you from catching cold.
- ○ It gets rid of the salt in your body.

- ○ I don't know.

RS116

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101085

72-73 Report #: RB116
69-70 Report #: U655

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-14
69-70 Package-Exercise:	05-14
72-73 National P-val:	
RB116	15.52
69-70 National P-value:	
RB116	14.47

Timing: (in seconds)

	Stimulus:	14
	Response:	35
	I don't know:	5
	Pause:	6
RB116	Exercise total:	60

Atoms are NOT a part of

○ compounds.
● electrons.
○ elements.
○ matter.
○ molecules.

○ I don't know.

RP117

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101087

72-73 Report #: RP117
69-70 Report #: U657

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-29
69-70 Package-Exercise: 06-05

72-73 National P-val:
RP117 12.47
69-70 National P-value:
RP117 11.59

Timing: (in seconds)
Stimulus: 9
Response: 40
I don't know: 5
Pause: 6
RP117 Exercise total: 60

Iron is most likely to rust when it is

● damp.

○ dry.

○ painted.

○ covered with soap.

○ covered with grease.

○ I don't know.

RP118

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101091

72-73 Report #: RP118
69-70 Report #: U622

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-15
69-70 Package-Exercise:	07-01
72-73 National P-val:	
RP118	66.31
69-70 National P-value:	
RP118	75.29

Timing: (in seconds)

	Stimulus:	10
	Response:	40
	I don't know:	5
	Pause:	6
RP118	Exercise total:	61

Water falls from the sky as all of the following EXCEPT

○ hail.

○ rain.

● smoke.

○ snow.

○ I don't know.

RP119

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101093

72-73 Report #: RP119
69-70 Report #: U619

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-06
69-70 Package-Exercise:	07-06
72-73 National P-val:	
RP119	74.17
69-70 National P-value:	
RP119	77.80

Timing: (in seconds)

	Stimulus:	9
	Response:	40
	I don't know:	5
	Pause:	6
RP119	Exercise total:	60

Which of the following animals do NOT lay eggs?

○ Chickens

● Dogs

○ Frogs

○ Turtles

○ I don't know.

RE120

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101094

72-73 Report #: RB120
69-70 Report #: U601

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	04-02
69-70 Package-Exercise:	07-12
72-73 National P-val:	
RB120	90.40
69-70 National P-value:	
RB120	95.75

Timing: (in seconds)

	Stimulus:	7
	Response:	42
	I don't know:	5
	Pause:	6
RB120	Exercise total:	60

Which of the following can be weighed on a scale?

● Fish
○ Freedom
○ Friendship
○ Fun

○ I don't know.

RP121

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101096

72-73 Report #: RP121
69-70 Report #: U605

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-33
69-70 Package-Exercise:	08-01

72-73 National P-val:
RP121 89.18
69-70 National P-value:
RP121 92.90

Timing: (in seconds)
Stimulus: 8
Response: 41
I don't know: 5
Pause: 6
RP121 Exercise total: 60

How many stars are there in the universe?

○ 12

○ 893

○ About a million

● More than have been counted

○ I don't know.

RP123

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101097

72-73 Report #: RP122
69-70 Report #: U624, U703

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	04-22	02-14
69-70 Package-Exercise:	08-02	04-14
72-73 National P-val: RP122	75.65	89.94
69-70 National P-value: RP122	73.91	93.72

Timing: (in seconds)

	Stimulus:	10	11
	Response:	39	9
	I don't know:	5	5
	Pause:	6	6
RP122	Exercise total:	60	31

Most of the Earth's surface is

○ cities and towns.
○ farm land.
○ solid rock.
● water.
○ yellow.

○ I don't know.

RF123

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101099

72-73 Report #: RP123
69-70 Report #: U639

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-04
69-70 Package-Exercise:	08-05
72-73 National P-val:	
RP123	41.24
69-70 National P-value:	
RP123	94.39

Timing: (in seconds)

Stimulus: 8
Response: 41
I don't know: 5
Pause: 6
RP123 Exercise total: 60

The bones and shells of sea animals that lived millions of years ago can be found in the

○ ocean water.
○ ice on a pond.
○ trunks of trees.
● rocks in the ground.

○ I don't know.

RB124

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 101100

72-73 Report #: RB124
69-70 Report #: U647

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 02-32
69-70 Package-Exercise: 08-08

72-73 National P-val:
RB124 38.71
69-70 National P-value:
RB124 36.79

Timing: (in seconds)
Stimulus: 13
Response: 38
I don't know: 5
Pause: 6
RB124 Exercise total: 62

Green plants make sugar by the process called

- ○ digestion.
- ○ evaporation.
- ○ osmosis.
- ● photosynthesis.
- ○ respiration.

- ○ I don't know.

RG125

69

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 101102

72-73 Report #: RB125
69-70 Report #: U718

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	02-11	01-28
69-70 Package-Exercise:	01-04	
72-73 National P-val:		
RB125	61.96	46.56
69-70 National P-value:		
RB125	61.68	
Timing: (in seconds)		
Stimulus:	12	13
Response:	8	*
I don't know:	5	*
Pause:	7	*
RB125 Exercise total:	32	*

*Time not limited by paced tape.

An average serving of which of the following foods would provide the most protein for building and repairing body tissues?

- ○ Boiled potatoes
- ○ Green beans
- ● Lean meat
- ○ Oatmeal
- ○ White bread

- ○ I don't know.

R8126

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

8-101103-2

NAEP #: 101103

72-73 Report #: RB126
69-70 Report #: U727

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 02-18
69-70 Package-Exercise: 02-02

72-73 National P-val:
RB126 49.29
69-70 National P-value:
RB126 53.23

Timing: (in seconds)
Stimulus: 15
Response: 20
I don't know: 5
Pause: 6
RB126 Exercise total: 46

When a person sees something, what carries the message from the eyes to the brain?

○ Arteries
○ Glands
○ Muscles
● Nerves
○ Veins

○ I don't know.

R5127

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101105

72-73 Report #: RB127
69-70 Report #: U711

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	04-05
69-70 Package-Exercise:	03-08
72-73 National P-val:	
RB127	78.24
69-70 National P-value:	
RB127	76.92

Timing: (in seconds)

	Stimulus:	12
	Response:	22
	I don't know:	5
	Pause:	7
RB127	Exercise total:	46

What is the most important thing that the lungs do?

○ Hold the chest out
○ Protect against germs
○ Move different parts of the body
○ Pump the blood through the body
● Provide a place for oxygen to enter the blood

○ I don't know.

R6129

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101108

72-73 Report #: RB128
69-70 Report #: U706

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	08-01
69-70 Package-Exercise:	04-03
72-73 National P-val:	
RB128	84.17
69-70 National P-value:	
RB128	85.66

Timing: (in seconds)

	Stimulus:	14
	Response:	21
	I don't know:	5
	Pause:	6
RB128	Exercise total:	46

Green plants are important to animals because the plants

- ○ consume both food and oxygen.
- ○ consume food and give off oxygen.
- ○ consume food and give off carbon dioxide.
- ● produce food and give off oxygen.
- ○ produce food and give off carbon dioxide.

- ○ I don't know.

R6123

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101109

72-73 Report #: RP129
69-70 Report #: U731

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	09-04	03-22
69-70 Package-Exercise:	04-07	
72-73 National P-val:		
RB129	51.13	63.68
69-70 National P-value:		
RB129	49.72	

Timing: (in seconds)			
	Stimulus:	19	22
	Response:	32	*
	I don't know:	5	*
	Pause:	6	*
RB129	Exercise total:	62	*

*Time not limited by paced tape.

What is needed to move cars, heat hamburgers, and light rooms?

○ Conservation
○ Efficiency
● Energy
○ Friction
○ Magnetism

○ I don't know.

RP130

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101110

72-73 Report #: RP130
69-70 Report #: U710

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	02-09	07-07
69-70 Package-Exercise:	05-03	
72-73 National P-val:		
RP130	81.63	89.25
69-70 National P-value:		
RP130	79.20	

Timing: (in seconds)			
	Stimulus:	13	15
	Response:	7	*
	I don't know:	5	*
	Pause:	6	*
RP130	Exercise total:	31	*

*Time not limited by paced tape.

If a neutral atom loses an electron, which of the following is formed?

○ A gas

● An ion

○ An acid

○ A radical

○ A molecule

○ I don't know.

RP131

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 101111

72-73 Report #: RP131
69-70 Report #: U742

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	08-20
69-70 Package-Exercise:	05-05
72-73 National P-val:	
RP131	21.75
69-70 National P-value:	
RP131	28.43

Timing: (in seconds)

	Stimulus:	13
	Response:	7
	I don't know:	5
	Pause:	6
RP131	Exercise total:	31

Seeds come from which of the following parts of a plant?

○ Bark
● Flower
○ Leaf
○ Root
○ Stem

○ I don't know.

R6132

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

113

NAEP #: 101114

72-73 Report #: RB132
69-70 Report #: U713

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	09-19
69-70 Package-Exercise:	06-01
72-73 National P-val:	
RB132	68.44
69-70 National P-value:	
RB132	74.37

Timing: (in seconds)

	Stimulus:	9
	Response:	11
	I don't know:	5
	Pause:	7
RB132	Exercise total:	32

Of the following, cancer is best described as

○ a disease of the aged.

○ an inherited disease.

○ a consequence of infection.

● uncontrolled cell division.

○ a disease of the blood which then spreads to other parts of the body.

○ I don't know.

R6133

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101116

72-73 Report #: RB133
69-70 Report #: U743, U820

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	17IS
72-73 Package-Exercise:	03-31	11-24
69-70 Package-Exercise:	06-06	07-01
72-73 National P-val:		
RB133	26.10	57.11
69-70 National P-value:		
RB133	28.97	61.57
Timing: (in seconds)		
Stimulus:	19	17
Response:	16	18
I don't know:	5	5
Pause:	6	2
RB133 Exercise total:	46	42

What does an electric power company sell in units of kilowatt-hours?

○ Atoms

○ Electrons

● Energy

○ Radiation

○ Time

○ I don't know.

AP134

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101117

72-73 Report #: RP134
69-70 Report #: U735

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	09-06
69-70 Package-Exercise:	06-07
72-73 National P-val:	
RP134	41.89
69-70 National P-value:	
RP134	45.53

Timing: (in seconds)

	Stimulus:	12
	Response:	8
	I don't know:	5
	Pause:	6
RP134	Exercise total:	31

The only star you usually see in the daytime is

○ Venus.
● the Sun.
○ the Moon.
○ the Pole Star.
○ Alpha Centauri.

○ I don't know.

RP13S

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101118

72-73 Report #: RP135
69-70 Report #: U705

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-01
69-70 Package-Exercise:	06-08
72-73 National P-val:	
RP135	93.49
69-70 National P-value:	
RP135	93.21

Timing: (in seconds)

	Stimulus:	9
	Response:	11
	I don't know:	5
	Pause:	6
RP135	Exercise total:	31

[redacted]

When one sees a powder made up of both white specks and black specks, one is able to conclude that he has

○ sugar.
○ pepper.
● a mixture.
○ an element.
○ a pure compound.

○ I don't know.

RP136

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101119

72-73 Report #: RP136
69-70 Report #: U715

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	06-20
69-70 Package-Exercise:	07-01
72-73 National P-val:	
RP136	70.00
69-70 National P-value:	
RP136	69.67

Timing: (in seconds)

	Stimulus:	14
	Response:	6
	I don't know:	5
	Pause:	6
RP136	Exercise total:	31

The time it takes the Moon to go from new moon to full moon and back to new moon is about

○ $\frac{1}{2}$ day.
○ 1 day.
○ 14 days.
● 28 days.
○ 365 days.

○ I don't know.

RP137

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101120

72-73 Report #: RP137
69-70 Report #: U723

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	03-06
69-70 Package-Exercise:	08-01
72-73 National P-val:	
RP137	50.28
69-70 National P-value:	
RP137	58.52

Timing: (in seconds)

	Stimulus:	15
	Response:	19
	I don't know:	5
	Pause:	6
RP137	Exercise total:	45

Which of the following diseases is known to be transmitted by an insect?

○ Cancer
○ Diabetes
● Malaria
○ Measles
○ Polio

○ I don't know.

R613a

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101122

72-73 Report #: RB138
69-70 Report #: U707

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	04-23
69-70 Package-Exercise:	08-05
72-73 National P-val:	
RB138	77.02
69-70 National P-value:	
RB138	84.63

Timing: (in seconds)

	Stimulus:	12
	Response:	9
	I don't know:	5
	Pause:	6
RB138	Exercise total:	32

Which of the following is produced when a candle burns?

○ Carbon atoms in the same crystal form as diamonds
○ Hydrogen gas
○ Nitrogen gas
○ Oxygen gas
● Water vapor

○ I don't know.

RP139

127

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101123

72-73 Report #: RP139
69-70 Report #: U747, U843

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	17IS
72-73 Package-Exercise:	03-21	06-22
69-70 Package-Exercise:	08-06	04-09
72-73 National P-val:		
RP139	7.99	10.38
69-70 National P-value:		
RP139	8.13	15.33
Timing: (in seconds)		
Stimulus:	16	16
Response:	19	20
I don't know:	5	5
Pause:	6	5
RP139 Exercise total:	46	46

From which of these can all kinds of matter be formed?

● Atoms

○ Compounds

○ Mixtures

○ Protons

○ I don't know.

RP140

129

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 101124

72-73 Report #: RP140
69-70 Report #: U725

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	02-05
69-70 Package-Exercise:	08-12
72-73 National P-val:	
RP140	61.43
69-70 National P-value:	
RP140	58.16

Timing: (in seconds)

	Stimulus:	9
	Response:	12
	I don't know:	5
	Pause:	6
RP140	Exercise total:	32

Which of the following have probably been on Earth the shortest time?

- ○ Alligators
- ○ Dragonflies
- ○ Fish
- ● Men
- ○ Snails

- ○ I don't know.

R6141

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101125

72-73 Report #: RB141
69-70 Report #: U720

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	09-14	05-07
69-70 Package-Exercise:	09-02	
72-73 National P-val:		
RB141	64.19	76.81
69-70 National P-value:		
RB141	61.56	
Timing: (in seconds)		
Stimulus:	12	12
Response:	8	*
I don't know:	5	*
Pause:	6	*
RB141 Exercise total:	31	*

*Time not limited by paced tape.

What is the main way that sweating helps your body?

○ It keeps your skin moist.

○ It keeps you from catching cold.

○ It rids your body of extra water.

○ It gets rid of the salt in your body.

● It aids in controlling body temperature.

○ I don't know.

RB142

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

133

NAEP #: 101126

72-73 Report #: RB142
69-70 Report #: U736

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	04-29
69-70 Package-Exercise:	09-03
72-73 National P-val:	
RB142	43.37
69-70 National P-value:	
RB142	44.28

Timing: (in seconds)

	Stimulus:	17
	Response:	18
	I don't know:	5
	Pause:	6
RB142	Exercise total:	46

Atoms of all the elements have

○ the same mass.
● nuclei in them.
○ the same weights.
○ an attraction for electrons.
○ the same number of charged particles.

○ I don't know.

RP143

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 101128

72-73 Report #: RP143
69-70 Report #: U739

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	07-28
69-70 Package-Exercise:	09-08
72-73 National P-val:	
RP143	34.79
69-70 National P-value:	
RP143	38.66

Timing: (in seconds)

	Stimulus:	13
	Response:	7
	I don't know:	5
	Pause:	6
RP143	Exercise total:	31

Which of the following helps to account for the fact that a compass can be used to find north on Earth?

○ Earth has only one moon.
● Earth has a magnetic field.
○ Earth reflects the Sun's light.
○ Most of Earth is covered by water.
○ Earth's temperature is not constant.

○ I don't know.

RP144

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101129

72-73 Report #: RP144
69-70 Report #: U717

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	08-05
69-70 Package-Exercise:	09-11
72-73 National P-val:	
RP144	62.18
69-70 National P-value:	
RP144	63.12

Timing: (in seconds)

	Stimulus:	19
	Response:	15
	I don't know:	5
	Pause:	6
RP144	Exercise total:	45

Which of the following animals is a vertebrate?

○ Clam

● Frog

○ Octopus

○ Spider

○ Starfish

○ I don't know.

R8145

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101131

72-73 Report #: RB145
69-70 Report #: U814

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	01-05
69-70 Package-Exercise:	02-01
72-73 National P-val:	
RB145	71.02
69-70 National P-value:	
RB145	72.37

Timing: (in seconds)

	Stimulus:	9
	Response:	11
	I don't know:	5
	Pause:	5
RB145	Exercise total:	30

Which of the following is an animal?

○ Bacterium
● Lizard
○ Moss
○ Snapdragon
○ Toadstool

○ I don't know.

RS14S

141

111

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101133

72-73 Report #: RB146
69-70 Report #: U804

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	11-03
69-70 Package-Exercise:	04-01
72-73 National P-val:	
RB146	85.67
69-70 National P-value:	
RB146	87.70

Timing: (in seconds)

	Stimulus:	8
	Response:	11
	I don't know:	5
	Pause:	6
RB146	Exercise total:	30

The human embryo normally develops in the

○ abdominal cavity.
○ ovary.
○ oviduct.
● uterus.
○ vagina.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101134

72-73 Report #: RB147
69-70 Report #: U826

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	03-17	05-28
69-70 Package-Exercise:	04-05	
72-73 National P-val:		
RB147	52.23	59.29
69-70 National P-value:		
RB147	46.67	
Timing: (in seconds)		
Stimulus:	11	12
Response:	23	*
I don't know:	5	*
Pause:	6	*
RB147 Exercise total:	45	*

*Time not limited by paced tape.

Which of the following is used in the treatment of diabetes?

○ **Estrogen**
● **Insulin**
○ **Iodine**
○ **Penicillin**
○ **Thyroxine**

○ **I don't know.**

RS148

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101135

72-73 Report #: RB148
69-70 Report #: U809

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	08-15	02-07
69-70 Package-Exercise:	05-13	
72-73 National P-val:		
RB148	79.79	91.07
69-70 National P-value:		
RB148	76.75	
Timing: (in seconds)		
Stimulus:	11	13
Response:	23	*
I don't know:	5	*
Pause:	6	*
RB148 Exercise total:	45	*

*Time not limited by paced tape.

The two elements that make up the greatest part of the mass of the Earth's crust are

○ aluminum and iron.
○ iron and copper.
● oxygen and silicon.
○ oxygen and hydrogen.
○ sodium and chlorine.

○ I don't know.

RP148

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101136

72-73 Report #: RP149
69-70 Report #: U847

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	06-07
69-70 Package-Exercise:	06-02
72-73 National P-val:	
RP149	8.43
69-70 National P-value:	
RP149	13.64

Timing: (in seconds)

	Stimulus:	15
	Response:	19
	I don't know:	5
	Pause:	6
RP149	Exercise total:	45

One example of oxidation is the

○ setting of concrete.
● burning of wood in air.
○ neutralizing of an acid.
○ dissolving of CO_2 in water.
○ forming of ice from water.

○ I don't know.

RPISD

149

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101137

72-73 Report #: RP150
69-70 Report #: U817

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	09-29
69-70 Package-Exercise:	06-05
72-73 National P-val:	
RP150	56.13
69-70 National P-value:	
RP150	68.56

Timing: (in seconds)

	Stimulus:	15
	Response:	6
	I don't know:	5
	Pause:	5
RP150	Exercise total:	31

Chemistry is a study principally concerned with the properties of

○ acids.

○ actions.

○ energy.

○ living things.

● matter.

○ I don't know.

RP151

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101138

72-73 Report #: RP151
69-70 Report #: U822

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	11-12
69-70 Package-Exercise:	06-06
72-73 National P-val:	
RP151	45.74
69-70 National P-value:	
RP151	57.93

Timing: (in seconds)

	Stimulus:	10
	Response:	10
	I don't know:	5
	Pause:	5
RP151	Exercise total:	30

What device changes the voltage of an electric power supply?

○ **Alternator**

○ **Battery**

○ **Rectifier**

● **Transformer**

○ **I don't know.**

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101139

72-73 Report #: RP152
69-70 Report #: U816

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	10-05
69-70 Package-Exercise:	06-09
72-73 National P-val:	
RP152	47.14
69-70 National P-value:	
RP152	61.39

Timing: (in seconds)

	Stimulus:	9
	Response:	11
	I don't know:	5
	Pause:	6
RP152	Exercise total:	31

If a sudden change took place on the surface of the Sun, the change could first be observed on Earth after about

○ 1 second.
○ 10 seconds.
○ 30 seconds.
● 8 minutes.
○ 1 hour.

○ I don't know.

RP153

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 101142

72-73 Report #: RP153
69-70 Report #: U832

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	06-15
69-70 Package-Exercise:	07-13
72-73 National P-val:	
RP153	27.51
69-70 National P-value:	
RP153	30.90

Timing: (in seconds)		
	Stimulus:	14
	Response:	21
	I don't know:	5
	Pause:	6
RP153	Exercise total:	46

The particles that make up atoms are usually said to be

○ protons and electrons only.
○ protons and neutrons only.
● protons, neutrons, and electrons.
○ alpha, beta, and gamma rays.
○ alpha particles and beta particles only.

○ I don't know.

RP154

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101146

72-73 Report #: RP154
69-70 Report #: U806

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	02-15
69-70 Package-Exercise:	08-14
72-73 National P-val:	
RP154	84.15
69-70 National P-value:	
RP154	84.63

Timing: (in seconds)

	Stimulus:	18
	Response:	17
	I don't know:	5
	Pause:	7
RP154	Exercise total:	47

Metal cans for holding foodstuffs are chiefly made of

- ○ copper.
- ● iron.
- ○ nickel.
- ○ tin.

- ○ I don't know.

RP155

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101147

72-73 Report #: RP155
69-70 Report #: R337

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	02-03
69-70 Package-Exercise:	09-02
72-73 National P-val:	
RP155	2.45
69-70 National P-value:	
RP155	2.97

Timing: (in seconds)

	Stimulus:	9
	Response:	11
	I don't know:	5
	Pause:	6
RP155	Exercise total:	31

On the average, in human females, the egg is released how many days after menstruation begins?

○ 2 days

○ 9 days

● 14 days

○ 20 days

○ 24 days

○ I don't know.

RB156

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101148

72-73 Report #: RB156
69-70 Report #: R330

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	08-19	01-13
69-70 Package-Exercise:	09-08	
72-73 National P-val:		
RB156	27.83	49.81
69-70 National P-value:		
RB156	29.01	
Timing: (in seconds)		
Stimulus:	14	17
Response:	21	*
I don't know:	5	*
Pause:	6	*
RB156 Exercise total:	46	*

*Time not limited by paced tape.

The particles most directly involved in forming chemical bonds are

● electrons.
○ neutrons.
○ photons.
○ positrons.
○ protons.

○ I don't know.

RP157

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

[illegible]

NAEP #: 101150

72-73 Report #: RP157
69-70 Report #: U823

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17IS
72-73 Package-Exercise: 07-20
69-70 Package-Exercise: 10-06

72-73 National P-val:
RP157 50.73
69-70 National P-value:
RP157 51.71

Timing: (in seconds)
Stimulus: 12
Response: 8
I don't know: 5
Pause: 5
RP157 , Exercise total: 30

A weather map usually shows all of the following EXCEPT

○ lows.

○ highs.

○ cold fronts.

○ areas where it is raining.

● mileages between major cities.

○ I don't know.

RP15B

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101151

72-73 Report #: RP158
69-70 Report #: U802

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	09-05
69-70 Package-Exercise:	10-12
72-73 National P-val:	
RP158	95.17
69-70 National P-value:	
RP158	96.13

Timing: (in seconds)

	Stimulus:	11
	Response:	8
	I don't know:	5
	Pause:	6
RP158	Exercise total:	30

About how long does it take for light from the nearest star other than the Sun to reach the Earth?

○ 1 week
○ 1 month
○ 1 year
● 5 years
○ 100 years

○ I don't know.

RP158

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101152

72-73 Report #: RP159
69-70 Report #: U844

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	02-28
69-70 Package-Exercise:	11-05
72-73 National P-val:	
RP159	10.36
69-70 National P-value:	
RP159	17.16

Timing: (in seconds)

	Stimulus:	13
	Response:	21
	I don't know:	5
	Pause:	6
RP159	Exercise total:	45

A refrigerator keeps its contents cool by

○ freshening food.

● transferring heat.

○ destroying energy.

○ keeping ice from melting.

○ producing electric charges.

○ I don't know.

RP160

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

A refrigerator keeps its contents cool by

○ **freshening food.**

● **transferring heat.**

○ **removing moisture.**

○ **destroying energy.**

○ **keeping ice from melting.**

○ **I don't know.**

RP160

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101153

72-73 Report #: RP160
69-70 Report #: U828

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	03-27	05-23
69-70 Package-Exercise:	11-07	
72-73 National P-val:		
RP160	40.87	52.28
69-70 National P-value:		
RP160	44.76	
Timing: (in seconds)		
Stimulus:	12	14
Response:	22	*
I don't know:	5	*
Pause:	6	*
RP160 Exercise total:	45	*

*Time not limited by paced tape.

An artificial pacemaker is an electronic device used by some patients with heart disease. What does this device simulate or replace?

○ The auricles

○ The ventricles

● The node in the right auricle

○ The heart valves between the auricles and ventricles

○ The valves that control the flow of blood into the aorta

○ I don't know.

RB161

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101155

72-73 Report #: RB161

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	Adult
72-73 Package-Exercise:	06-18
72-73 National P-val:	
RB161	7.69
Timing: (in seconds)	
Stimulus:	26
Response:	*
I don't know:	*
Pause:	*
RB161 Exercise total:	*

*Time not limited by paced tape.

A scientific model is best described as

○ a small copy of a larger, more complicated piece of equipment.

○ a person who always thinks and acts in a very scientific manner.

○ an assortment of laboratory apparatus designed for a single purpose.

● a scheme that guides one's thinking about something not completely known.

○ the leader of a group of scientists who are all working on the same problem.

○ I don't know.

RU162.

174

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 101159

72-73 Report #: RU162
69-70 Report #: U867

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: A. Know facts and simple concepts.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

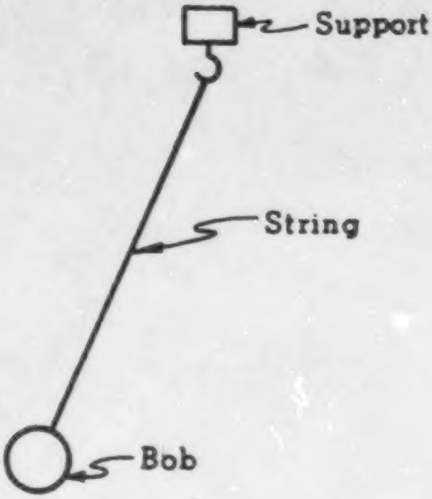
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	10-16
69-70 Package-Exercise:	01-07
72-73 National P-val:	
RU162	18.03
69-70 National P-value:	
RU162	17.53

Timing: (in seconds)

	Stimulus:	27
	Response:	22
	I don't know:	5
	Pause:	5
RU162	Exercise total:	59

The length of time required for a pendulum bob like that shown below to make one complete swing depends primarily upon the



○ mass of the bob.

○ temperature of the air.

● length of the pendulum string.

○ material of which the bob is made.

○ angle through which the bob swings.

○ I don't know.

176

RP163

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 102023

72-73 Report #: RP163
69-70 Report #: U819

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: B. Know laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	06-29
69-70 Package-Exercise:	05-01
72-73 National P-val:	
RP163	51.09
69-70 National P-value:	
RP163	61.53

Timing: (in seconds)

	Stimulus:	21
	Response:	28
	I don't know:	5
	Pause:	6
RP163	Exercise total:	60

The density of the human body is most nearly equal to the density of

○ air.

○ cork.

○ hydrogen.

○ iron.

● water.

○ I don't know.

RE164

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 102030

72-73 Report #: RB164
69-70 Report #: U740

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: B. Know laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	07-06	07-13
69-70 Package-Exercise:	03-01	
72-73 National P-val:		
RB164	32.92	52.11
69-70 National P-value:		
RB164	36.96	
Timing: (in seconds)		
Stimulus:	11	13
Response:	9	*
I don't know:	5	*
Pause:	6	*
RB164 Exercise total:	31	*

*Time not limited by paced tape.

How do we get scientific laws?

○ Scientists vote on them.
○ They are made by the police.
○ They are passed by Congress.
● They come from many experiments.

○ I don't know.

AU165

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 105009

72-73 Report #: RU165
69-70 Report #: U677

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: E. Know the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-18
69-70 Package-Exercise:	06-07
72-73 National P-val:	
RU165	26.00
69-70 National P-value:	
RU165	33.44

Timing: (in seconds)

	Stimulus:	12
	Response:	37
	I don't know:	5
	Pause:	6
RU165	Exercise total:	60

What topic do scientists know everything about?

○ Clouds
○ Stars
○ Trees
● No topic

○ I don't know.

RU1EG

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 105010

72-73 Report #: RU166
69-70 Report #: U678

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: E. Know the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	05-21
69-70 Package-Exercise:	07-15
72-73 National P-val:	
RU166	24.60
69-70 National P-value:	
RU166	25.89

Timing: (in seconds)

	Stimulus:	8
	Response:	41
	I don't know:	5
	Pause:	6
RU166	Exercise total:	60

Most scientists have gone to school for many years.

● I believe this statement.

○ I don't believe this statement.

○ I don't know.

RU157

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 105012

72-73 Report #: RU167
69-70 Report #: U772

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: E. Know the scientific enterprise.

69-70 Obj IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	07-04
69-70 Package-Exercise:	06-13
72-73 National P-val:	
RU167	93.91
69-70 National P-value:	
RU167	91.99

Timing: (in seconds)

	Stimulus:	7
	Response:	13
	I don't know:	5
	Pause:	6
RU167	Exercise total:	31

If you saw many scientists at work, a number of them would be

○ selling soap.

○ cooking meals.

○ painting walls.

● doing experiments.

○ I don't know.

RU16B

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 105015

72-73 Report #: RU168
69-70 Report #: U674

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
72-73 Subobj: E. Know the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	03-12
69-70 Package-Exercise:	02-07

72-73 National P-val:	
RU168	93.85
69-70 National P-value:	
RU168	93.79

Timing: (in seconds)

	Stimulus:	10
	Response:	39
	I don't know:	5
	Pause:	6
RU168	Exercise total:	60

When it is raining, which of the following must be true?

○ It is spring.

○ The Sun is shining.

○ The wind is blowing.

● There are clouds in the sky.

○ I don't know.

RP16B

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201055

72-73 Report #: RP169
69-70 Report #: U614

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-30
69-70 Package-Exercise:	01-16

72-73 National P-val:
RP169 81.76
69-70 National P-value:
RP169 81.35

Timing: (in seconds)

	Stimulus:	12
	Response:	37
	I don't know:	5
	Pause:	6
RP169	Exercise total:	60

Which of the following will speed up the burning of a campfire?

- ● Blow on the fire.
- ○ Cover the fire with sand.
- ○ Sprinkle dirt on the fire.
- ○ Sprinkle water on the fire.

- ○ I don't know.

RP170

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201056

72-73 Report #: RP170
69-70 Report #: U631

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-14
69-70 Package-Exercise:	02-08

72-73 National P-val:
RP170 63.34
69-70 National P-value:
RP170 67.27

Timing: (in seconds)

	Stimulus:	12
	Response:	37
	I don't know:	5
	Pause:	6
RP170	Exercise total:	60

Which of the following dissolves LEAST in water?

● Glass
○ Salt
○ Soap
○ Sugar

○ I don't know.

RP171

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201061

72-73 Report #: RP171
69-70 Report #: U645

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-03
69-70 Package-Exercise: 04-03

72-73 National P-val:
RP171 39.42
69-70 National P-value:
RP171 40.24

Timing: (in seconds)
Stimulus: 7
Response: 41
I don't know: 5
Pause: 6
RP171 Exercise total: 59

Which of the following could cause a rainbow?

○ Fog and smog

○ Rain and snow

○ Clouds and ice

● Sunshine and rain

○ I don't know.

RP172

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 201063

72-73 Report #: RP172
69-70 Report #: U612

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-10
69-70 Package-Exercise: 04-10

72-73 National P-val:
RP172 85.68
69-70 National P-value:
RP172 86.56

Timing: (in seconds)
Stimulus: 11
Response: 38
I don't know: 5
Pause: 6
RP172 Exercise total: 60

Of the following, which is smallest?

○ A bit of iron

● An atom of iron

○ A particle of iron

○ A molecule of iron

○ I don't know.

RP173

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201065

72-73 Report #: RP173
69-70 Report #: U654

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-12
69-70 Package-Exercise: 05-16

72-73 National P-val:
RP173 17.43
69-70 National P-value:
RP173 20.78

Timing: (in seconds)
Stimulus: 10
Response: 39
I don't know: 5
Pause: 6
RP173 Exercise total: 60

When an animal breathes faster and its heart beats faster, the animal is most likely

○ cold.

● frightened.

○ resting.

○ sleeping.

○ I don't know.

R6174.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201066

72-73 Report #: RB174
69-70 Report #: U625

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	03-25
69-70 Package-Exercise:	06-10
72-73 National P-val:	
RB174	70.20
69-70 National P-value:	
RB174	73.27

Timing: (in seconds)

	Stimulus:	11
	Response:	39
	I don't know:	5
	Pause:	6
RB174	Exercise total:	61

A pint of water at a temperature of 50° Fahrenheit is mixed with a pint of water at 70° Fahrenheit. The temperature of the water just after mixing will be about

○ 20° F.
○ 50° F.
● 60° F.
○ 70° F.
○ 120° F.

○ I don't know.

RP175

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

200

NAEP #: 201067

72-73 Report #: RP175
69-70 Report #: R141

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	04-05
69-70 Package-Exercise:	07-05
72-73 National P-val:	
RP175	6.41
69-70 National P-value:	
RP175	7.14

Timing: (in seconds)

	Stimulus:	23
	Response:	27
	I don't know:	5
	Pause:	6
RP175	Exercise total:	61

All of the following can be called matter EXCEPT

○ ice.

● ideas.

○ shoes.

○ water.

○ I don't know.

P176

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 201068

72-73 Report #: RP176
69-70 Report #: U650

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-29
69-70 Package-Exercise:	07-10
72-73 National P-val:	
RP176	38.88
69-70 National P-value:	
RP176	35.97

Timing: (in seconds)

	Stimulus:	8
	Response:	42
	I don't know:	5
	Pause:	6
RP176	Exercise total:	61

Evaporation takes place in all of the following cases EXCEPT

○ A wet chalkboard dries.

○ Dewdrops disappear from a leaf.

○ Water disappears from a birdbath.

● The outside of a cold glass gets wet.

○ A swimmer sits in the sun after he leaves the water.

○ I don't know.

RP177

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201069

72-73 Report #: RP177
69-70 Report #: U651

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	05-31
69-70 Package-Exercise:	08-16

72-73 National P-val:
RP177 24.37
69-70 National P-value:
RP177 34.28

Timing: (in seconds)
Stimulus: 21
Response: 29
I don't know: 5
Pause: 6
RP177 Exercise total: 61

Which of the following CANNOT be seen directly by the human eye using an ordinary-light microscope or telescope?

- ○ Moons of Jupiter
- ● A single atom of carbon
- ○ The craters on the Moon
- ○ A one-celled animal from pond water
- ○ Holes through which gases enter a leaf

- ○ I don't know.

RP178

206

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

Which of the following CANNOT be seen directly by the human eye using an ordinary-light microscope or telescope?

○ Moons of Jupiter
○ The craters on the Moon
● A single atom of carbon
○ A one-celled animal from pond water
○ Holes through which gases enter a leaf

○ I don't know.

RP17B

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201070

72-73 Report #: RP178
69-70 Report #: U732

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	07-10	03-02
69-70 Package-Exercise:	06-03	
72-73 National P-val: RP178	46.57	42.70
69-70 National P-value: RP178	49.54	

Timing: (in seconds)			
	Stimulus:	21	23
	Response:	14	*
	I don't know:	5	*
	Pause:	6	*
RP178	Exercise total:	46	*

*Time not limited by paced tape.

If all green plants died, what would be the most important effect on man?

○ He would have to eat meat only.

● Sooner or later man would die of starvation.

○ Man would get a little sick because he couldn't get vitamins.

○ Man couldn't build houses because there would be no lumber.

○ The land would be bare and not very pretty for man to look at.

○ I don't know.

R6179

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201071

72-73 Report #: RB179
69-70 Report #: U730

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 05-25
69-70 Package-Exercise: 06-09

72-73 National P-val:
RB179 42.45
69-70 National P-value:
RB179 50.54

Timing: (in seconds)
Stimulus: 24
Response: 10
I don't know: 5
Pause: 6
RB179 Exercise total: 45

Fanning can make a campfire burn better because the fanning

○ raises the atmospheric pressure.

○ warms materials to their kindling points.

○ increases the supply of material that can burn.

● increases the supply of oxygen for the burning.

○ provides the energy needed to keep the fire going.

○ I don't know.

RP1B11

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 201072

72-73 Report #: RP180
69-70 Report #: R206

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-05
69-70 Package-Exercise:	06-11
72-73 National P-val:	
RP180	74.54
69-70 National P-value:	
RP180	78.47

Timing: (in seconds)

	Stimulus:	20
	Response:	14
	I don't know:	5
	Pause:	6
RP180	Exercise total:	45

Suppose that a rubber balloon filled with air does not leak and that it is taken from Earth to the Moon. One can be sure that on the Moon, the balloon will have the same

○ size as on Earth.
● mass as on Earth.
○ weight as on Earth.
○ rate of fall as on Earth.
○ ability to float as on Earth.

○ I don't know.

RP181

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201073

72-73 Report #: RP181
69-70 Report #: U746, U830

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	17IS	Adult
72-73 Package-Exercise:	08-15	02-18	07-10
69-70 Package-Exercise:	08-11	10-07	
72-73 National P-val:			
RP181	21.52	26.75	22.91
69-70 National P-value:			
RP181	21.15	35.62	
Timing: (in seconds)			
Stimulus:	23	22	25
Response:	11	13	*
I don't know:	5	5	*
Pause:	6	6	*
RP181 Exercise total:	45	46	*

*Time not limited by paced tape.

A catalyst in a chemical system may do all of the following EXCEPT

○ speed up the reaction.
○ change the principal product.
○ make a reaction economically important.
○ change the temperature used for the reaction.
● change the amounts of products and reactants present at equilibrium.

○ I don't know.

RP1B2

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201075

72-73 Report #: RP182
69-70 Report #: U840

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	11-07
69-70 Package-Exercise:	02-08
72-73 National P-val:	
RP182	21.22
69-70 National P-value:	
RP182	21.83

Timing: (in seconds)

	Stimulus:	21
	Response:	28
	I don't know:	5
	Pause:	5
RP182	Exercise total:	59

The Earth is classified as a planet for all of the following reasons EXCEPT

○ it revolves around the Sun.

○ its orbit is nearly circular.

● it has a natural satellite, the Moon.

○ it is too cold to give off light of its own.

○ its mass is several times that of the most massive asteroid.

○ I don't know.

RP183

187

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 201078

72-73 Report #: RP183
69-70 Report #: U846

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	10-14
69-70 Package-Exercise:	08-15
72-73 National P-val:	
RP183	12.37
69-70 National P-value:	
RP183	13.15

Timing: (in seconds)		
	Stimulus:	22
	Response:	12
	I don't know:	5
	Pause:	6
RP183	Exercise total:	45

In hot climates, the advantage of buildings with white surfaces is that white surfaces effectively

○ absorb light.
○ diffract light.
● reflect light.
○ refract light.
○ transmit light.

○ I don't know.

RP184

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201079

72-73 Report #: RP184
69-70 Report #: U813

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	03-09	[illegible]1
69-70 Package-Exercise:	09-01	
72-73 National P-val:		
RP184	67.61	[illegible]
69-70 National P-value:		
RP184	72.11	

Timing: (in seconds)		
Stimulus:	15	18
Response:	20	*
I don't know:	5	*
Pause:	6	*
RP184 Exercise total:	46	*

*Time not limited by paced tape.

All of the following have been found in rock. Which one is NOT a fossil?

○ Brachiopod shells

○ Dinosaur footprints

○ Fish bones

● Raindrop imprints

○ Worm trails

○ I don't know.

R6185

191

221

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 201080

72-73 Report #: RB185
69-70 Report #: U812

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	05-17	06-13
69-70 Package-Exercise:	09-13	
72-73 National P-val:		
RB185	72.00	58.57
69-70 National P-value:		
RB185	71.75	

Timing: (in seconds)

Stimulus:	15	18
Response:	20	*
I don't know:	5	*
Pause:	5	*
RB185 Exercise total:	45	*

*Time not limited by paced tape.

On which one of the following temperature scales is a one-degree temperature change a smaller change than on the others?

○ Centigrade

● Fahrenheit

○ Kelvin

○ I don't know.

RP186

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201082

72-73 Report #: RP186

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17IS
72-73 Package-Exercise: 04-25

72-73 National P-val:
RP186 32.49

Timing: (in seconds)
Stimulus: 12
Response: 9
I don't know: 5
Pause: 5
RP186 Exercise total: 31

How does dew form on grass?

○ It is formed from melted frost.

○ It is pushed out of holes in the grass.

● It is formed on the grass from water in the air.

○ It falls as melted snow and is caught on the grass.

○ It falls like a light rain and is caught on the grass.

○ I don't know.

RP187

195

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201083

72-73 Report #: RP187

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: A. Understand and apply facts and simple concepts.

Science Type: Physical science

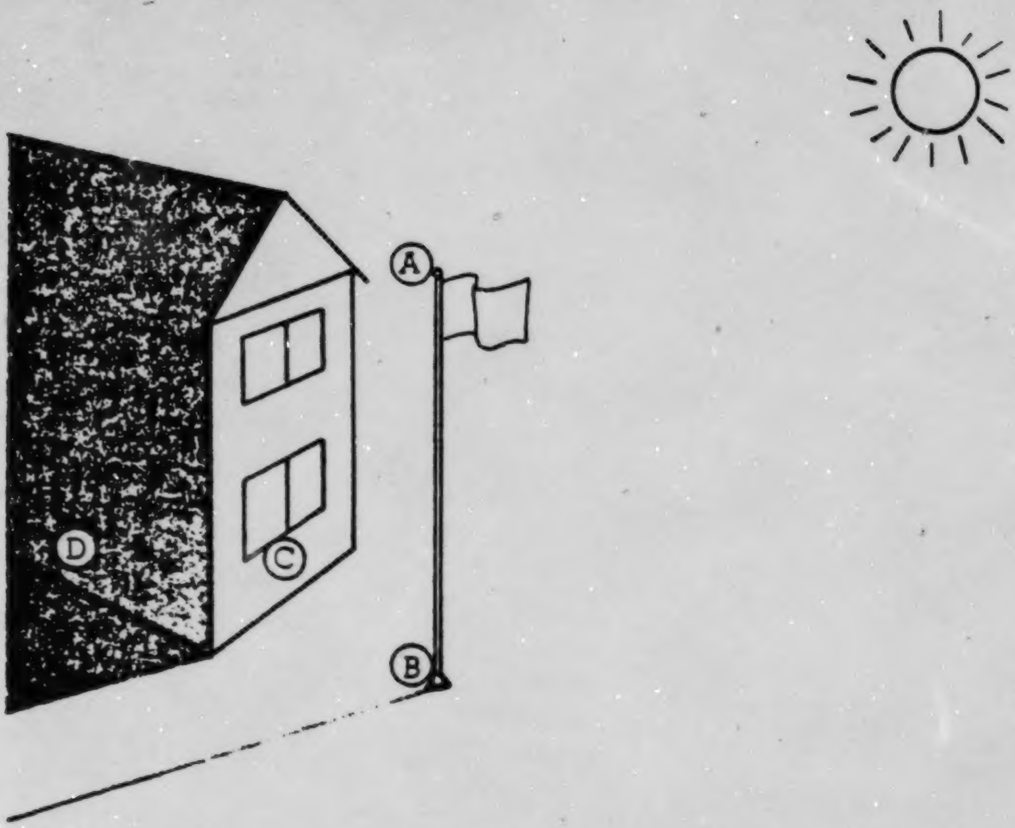
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	Adult
72-73 Package-Exercise:	07-18
72-73 National P-val:	
RP187	85.24

Timing: (in seconds)

	Stimulus:	24
	Response:	*
	I don't know:	*
	Pause:	*
RP187	Exercise total:	*

*Time not limited by paced tape.



To find the temperature of the air outdoors, it would be best to put the thermometer at which of the places marked in the picture?

○ A

○ B

○ C

● D

○ I don't know.

RP1B8

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201085

72-73 Report #: RP188
69-70 Report #: U673

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

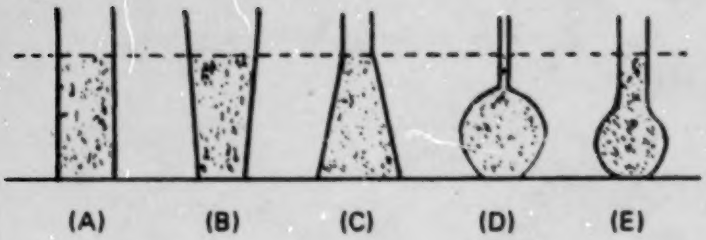
Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	04-32
69-70 Package-Exercise:	06-11

72-73 National P-val:
RP188 8.18
69-70 National P-value:
RP188 11.84

Timing: (in seconds)

	Stimulus:	13
	Response:	36
	I don't know:	5
	Pause:	6
RP188	Exercise total:	60



A quart of water at room temperature (70° Fahrenheit) is poured into each of the five containers as shown above. When the water in all five is heated to 150° Fahrenheit, the water level will be highest in container

○ A.
○ B.
○ C.
● D.
○ E.

○ I don't know.

RP 189

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201086

72-73 Report #: RP189
69-70 Report #: U726

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	08-17	01-15
69-70 Package-Exercise:	08-02	
72-73 National P-val:		
RP189	52.93	65.44
69-70 National P-value:		
RP189	56.47	
Timing: (in seconds)		
Stimulus:	24	26
Response:	11	*
I don't know:	5	*
Pause:	6	*
RP189 Exercise total:	46	*

*Time not limited by paced tape.

Which of the following should you do when a person faints?

○ Tightly bandage him.

● Lay him down and keep him warm.

○ Hold him up and apply hot packs.

○ Hold him up and apply cold packs.

○ Lay him down and apply cold packs.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 201104

72-73 Report #: RB190
69-70 Report #: R225

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

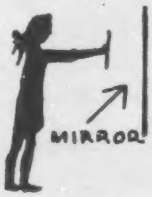
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-08	01-08
69-70 Package-Exercise:		09-06
72-73 National P-val:		
RB190	24.54	33.70
69-70 National P-value:		
RB190		31.53

Timing: (in seconds)

	Stimulus:	17	17
	Response:	34	32
	I don't know:	5	5
	Pause:	6	6
RB190	Exercise total:	62	60

You hold a paper with the word **POPSICLE** in front of you while you look into a mirror as shown in this diagram.



What does the word look like when you see it in the mirror?

○ **POPSICLE**

○ **ꟼOꟼƧIƆ⅃Ǝ**

● **Ǝ⅃ƆIƧꟼOꟼ**

○ **ELCISPOP**

○ I don't know.

RU254

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

8-202047-1.2

NAEP #: 202047

72-73 Report #: RU254

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: B. Understand and apply laws (principles).

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	06-08	07-02
72-73 National P-val: RU254	40.77	62.34

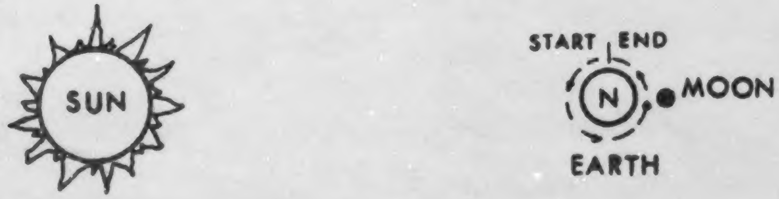
Timing: (in seconds)

	Stimulus:	15	19
	Response:	15	12
	I don't know:	5	5
	Pause:	6	6
RU254	Exercise total:	41	42

ILLUSTRATIONS FOR EXERCISE

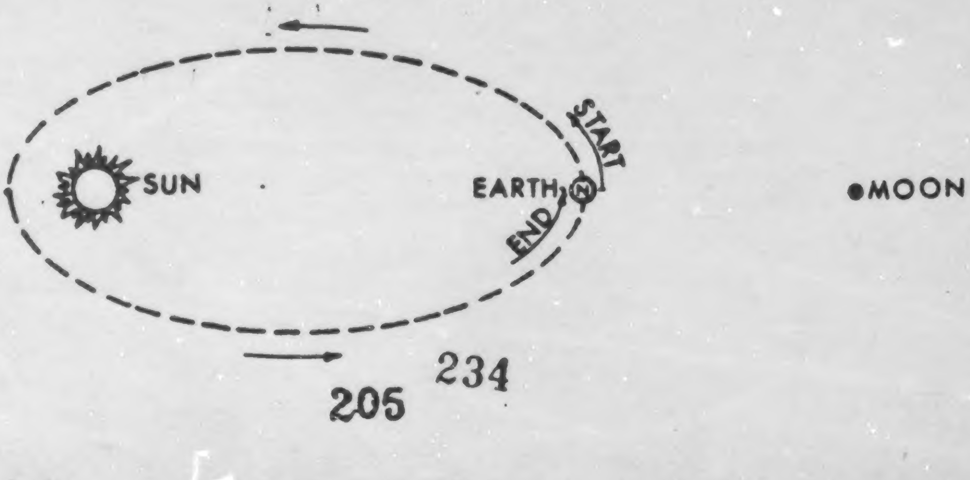
Parts A and B: Cause of Day and Night

One counterclockwise ROTATION (seen from above) looks like the illustration below. The Earth sphere is spun in place on its axis exactly once around, (or within the limits 3/4 to 1 1/4 times around). Direction of rotation is not critical for Part A; however, correct counterclockwise direction is shown so you will recognize it if respondent demonstrates it for Part B. Ignore any movement of the other two spheres, and/or any other movements of the Earth sphere.



Parts C and D: Cause of a Year

One counterclockwise REVOLUTION (seen from above) looks like the illustration below. The Earth sphere is moved out and around behind the Sun sphere and returned to its original place, (or within 2" either way) in one complete orbit which may be either elliptical or more nearly round. Direction of revolution is not critical for Part C; however, correct counterclockwise revolution is shown so you will recognize it if respondent demonstrates it for Part D. Ignore any movement of the Moon or Sun spheres, and/or any other movements of the Earth sphere.



Do not administer without verifying your understanding of rotation and revolution as described on page 3.

Place Handout Number 27: three spheres, on table or other flat surface, with the Earth directly in front of respondent, the Sun about 1 foot from the earth sphere on respondent's left and the moon sphere about 6 inches from the earth sphere on respondent's right.

This ball represents the Sun. (Point to large sphere.)

This ball represents the Earth. (Point to medium-sized sphere.)

The North and South Poles are marked N and S. (Show respondent.)

The Equator is here. (Show respondent.)

This ball represents the Moon. (Point to the smallest sphere.)

RP262

(Continued)

A. Use any balls you may need to show me what causes a day and a night. You may move the balls around while you work out your answer. Then tell me when you are ready to demonstrate what happens in a 24-hour period to make one day and one night.

Observe respondent carefully as he demonstrates. He should correctly rotate (spin) the Earth on its axis, one complete turn.

If this is done, regardless of the direction of rotation and all other movements of the spheres, the demonstration is correct.

● Correct demonstration: Earth rotates one full turn (Go to B)

○ Incorrect demonstration, describe: ______________________________

____

____

______________________________ (Go to C)

○ I don't know. (Go to C)

○ Did not attempt demonstration (Go to C)

RP262

(Continued)

B. In which direction would the Earth be spinning?

● Eastward (counterclockwise); says or demonstrates

○ Westward (clockwise); says or demonstrates

○ Other, says or demonstrates, describe: ____________________

____

____

____

○ I don't know.

○ No response

C. Now, use any balls you may need to show me what causes a year. Once again you may move the balls around while you work out your answer. Then, tell me when you are ready to demonstrate what happens in a 365-day period to make a year.

Observe respondent carefully as he demonstrates. He should correctly revolve (move) the Earth around the Sun, once completely.

If this is done, regardless of the direction of revolution and all other movements of the spheres, the demonstration is correct.

● Correct demonstration: Earth revolves one full turn around Sun (Go to D)

○ Incorrect demonstration, describe: ____________________

____

____

____________________ (End the exercise)

○ I don't know. (End the exercise)

○ Did not attempt demonstration (End the exercise)

(Continued)

D. In which direction would the Earth be revolving around the Sun?

● Counterclockwise; says or demonstrates

○ Clockwise; says or demonstrates

○ Other; says or demonstrates, describe: ______

○ I don't know.

○ No response

○ Apparatus failed.

RP252

NAEP #: 202049

72-73 Report #: RP262

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Professional
Administration Mode: Individual

Age:	9	13	17IS	Adult
72-73 Package-Exercise:	08-07	12-09	12-04	04-06
72-73 National P-val:				
RP262A	34.49	48.12	53.59	56.40
RP262B	15.88	24.30	28.30	28.84
RP262C	33.05	51.72	60.31	49.96
RP262D	20.34	28.30	32.63	23.13

Timing: No paced tape was used in this individually administered exercise.

Exercise 202049-1,2,3,4; RP 262

Part A:

Correct: Earth rotates one full turn. Any revolution movement should be disregarded, any movement of the moon should be disregarded as long as rotation is shown.

Incorrect: Up and down rotation. Rotation in which North does not remain on top. Oblique or diagonal rotation.
Revolution around sun, etc., only.
Movement of moon and/or sun only.

Part B: (not asked unless Part A correct)

Correct: Eastward or counterclockwise; says or demonstrates.
Can explain instead of saying those exact words.

Incorrect: To the left. To the right. Up or down.
I would be spinning around the sun.

Part C:

Correct: Earth revolves one full turn around sun. Any rotation movement - or any "extra" movement should be disregarded as long as the proper revolution is shown.

Incorrect: Moves sun around earth. Moves moon around earth or sun.
Rotates the earth on its axis. Shows part of a revolution, or more than one revolution.
Moves earth up and down, not around.

Part D: (not asked unless Part C correct)

Correct: Counterclockwise; says or demonstrates.

Incorrect: Up and down. Right or left.

Note: Parts A and B are one unit.
Parts C and D are one unit.

It is most likely to snow when the weather is

○ warm and clear.

○ warm and foggy.

○ cold and clear.

○ warm and cloudy.

● cold and cloudy.

○ I don't know.

RP191

212
241

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202078

72-73 Report #: RP191
69-70 Report #: U620

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

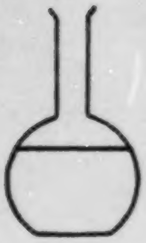
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

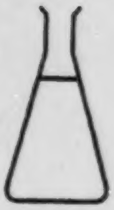
Age:	9
72-73 Package-Exercise:	02-10
69-70 Package-Exercise:	03-19
72-73 National P-val:	
RP191	78.77
69-70 National P-value:	
RP191	76.66

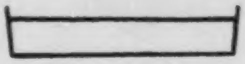
Timing: (in seconds)

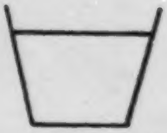
	Stimulus:	11
	Response:	40
	I don't know:	5
	Pause:	6
RP191	Exercise total:	62

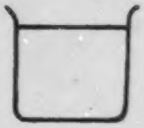
A pint of water is poured into each of the containers shown below and they are left uncovered in a warm room.


A


B


C


D


E

After a day, which container will have the LEAST amount of water left in it?

○ A

○ B

● C

○ D

○ E

○ I don't know.

RP192

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 202080

72-73 Report #: RP192
69-70 Report #: U629

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

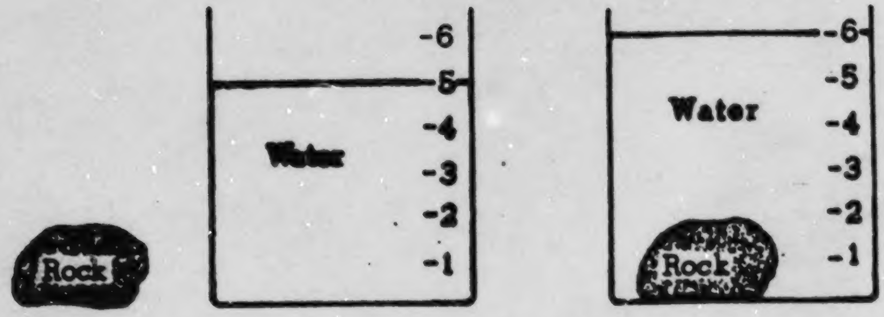
Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 04-19
69-70 Package-Exercise: 05-10

72-73 National P-val:
RP192 61.70
69-70 National P-value:
RP192 69.01

Timing: (in seconds)
Stimulus: 20
Response: 30
I don't know: 5
Pause: 6
RP192 Exercise total: 61


Rock
Water
-6
-5
-4
-3
-2
-1
Water
Rock
-6
-5
-4
-3
-2
-1

A rock is put into a pail that has some water in it. Before the rock is put into the pail, the water is at the 5-pint line. After the rock is added, the water rises to the 6-pint line. The space taken up by the rock is

- ● 1 pint.
- ○ 5 pints.
- ○ 6 pints.
- ○ 11 pints.

- ○ I don't know.

RP193

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 202081

72-73 Report #: RP193
69-70 Report #: U626

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-24
69-70 Package-Exercise:	07-11

72-73 National P-val:
RP193 64.69
69-70 National P-value:
RP193 72.46

Timing: (in seconds)
Stimulus: 22
Response: 27
I don't know: 5
Pause: 6
RP193 Exercise total: 60

It would take the most work to stop which of the following cars?

- ○ A light car going 20 miles per hour
- ○ A light car going 40 miles per hour
- ○ A heavy car going 10 miles per hour
- ○ A heavy car going 20 miles per hour
- ● A heavy car going 40 miles per hour

- ○ I don't know.

RP154

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202083

72-73 Report #: RP194
69-70 Report #: U716

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	03-33
69-70 Package-Exercise:	07-05
72-73 National P-val:	
RP194	60.93
69-70 National P-value:	
RP194	68.00

Timing: (in seconds)

	Stimulus:	20
	Response:	15
	I don't know:	5
	Pause:	6
RP194	Exercise total:	46

A fossil of an ocean fish was found in a rock outcrop on a mountain. This probably means that

- ○ fish once lived on the mountain.
- ○ the relative humidity was once very high.
- ● the mountain was raised up after the fish died.
- ○ fish used to be amphibians like toads and frogs.
- ○ the fossil fish was probably carried to the mountain by a great flood.

- ○ I don't know.

R6195

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 202084

72-73 Report #: RB195
69-70 Report #: R228

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	Adult
72-73 Package-Exercise:	05-13	02-18
69-70 Package-Exercise:	09-07	
72-73 National P-val:		
RB195	26.08	39.81
69-70 National P-value:		
RB195	25.91	
Timing: (in seconds)		
Stimulus:	27	28
Response:	8	*
I don't know:	5	*
Pause:	6	*
RB195 Exercise total:	46	*

*Time not limited by paced tape.

In guinea pigs, fur color is dependent on only one pair of genes and black is dominant over white. If no mutations occur, what will happen if a purebred black guinea pig is crossed with a white guinea pig?

○ $\frac{1}{2}$ of the offspring will be black; $\frac{1}{2}$ will be white.

○ $\frac{3}{4}$ of the offspring will be black; $\frac{1}{4}$ will be white.

○ $\frac{9}{16}$ of the offspring will be black; $\frac{7}{16}$ will be white.

● All of the offspring will be black.

○ All of the offspring will be white.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202085

72-73 Report #: RB196
69-70 Report #: U824

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	09-13
69-70 Package-Exercise:	01-04
72-73 National P-val:	
RB196	44.17
69-70 National P-value:	
RB196	47.96

Timing: (in seconds)
Stimulus: 36
Response: 27
I don't know: 5
Pause: 6
RB196 Exercise total: 74

If a large amount of mineral fertilizer is placed around a house plant, the plant is likely to wilt and die. The best explanation for this is that

○ the plant ages more rapidly.

○ the plant weakens and dies of disease.

● the amount of water in the roots has been decreased.

○ the plant cannot produce food because its chlorophyll has been destroyed.

○ the fertilizer uses up the carbon dioxide needed by the plant to make its own food.

○ I don't know.

RB197

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202087

72-73 Report #: RB197
69-70 Report #: U845

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

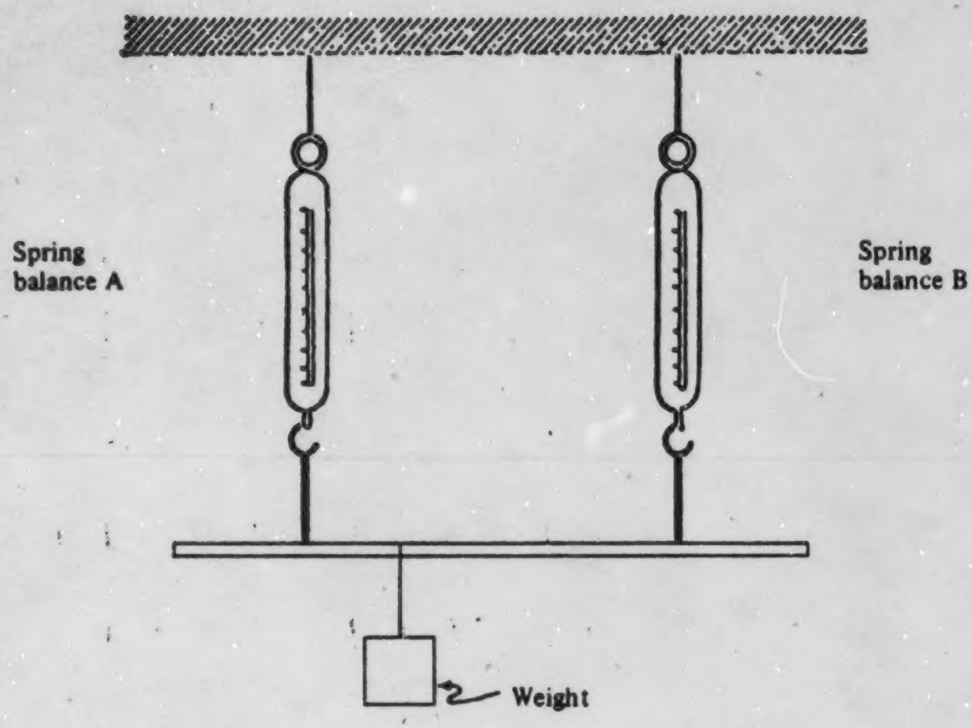
Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise;	10-09	06-29
69-70 Package-Exercise:	02-02	
72-73 National P-val:		
RB197	15.38	11.30
69-70 National P-value:		
RB197	16.41	
Timing: (in seconds)		
Stimulus:	29	33
Response:	20	*
I don't know:	5	*
Pause:	6	*
RB197 Exercise total:	60	*

*Time not limited by paced tape.

Two identical spring balances are arranged as shown. Which spring balance will show the higher reading?


Spring balance A
Spring balance B
Weight

● **A.**

○ **B.**

○ **Both spring balances will show the same reading.**

○ **One cannot predict which spring balance will show the higher reading.**

○ **I don't know.**

RP158

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202088

72-73 Report #: RP198
69-70 Report #: U811

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

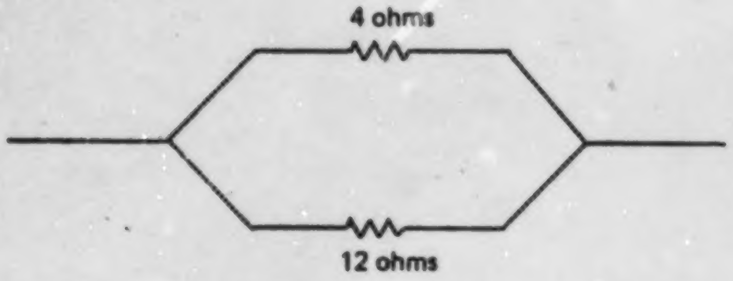
Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	09-19
69-70 Package-Exercise:	05-02
72-73 National P-val:	
RP198	74.69
69-70 National P-value:	
RP198	74.79

Timing: (in seconds)

	Stimulus:	17
	Response:	33
	I don't know:	5
	Pause:	6
RP198	Exercise total:	61

The resistance of the parallel connection of the two resistors shown below will be most nearly



● 3 ohms.
○ 8 ohms.
○ 12 ohms.
○ 16 ohms.
○ 48 ohms.

○ I don't know.

RP198

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202089

72-73 Report #: RP199
69-70 Report #: U849

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	07-26	06-10
69-70 Package-Exercise:	05-04	
72-73 National P-val:		
RP199	8.76	10.64
69-70 National P-value:		
RP199	8.67	
Timing: (in seconds)		
Stimulus:	14	17
Response:	36	*
I don't know:	5	*
Pause:	5	*
RP199 Exercise total:	60	*

*Time not limited by paced tape.

During an electrolysis, 1.0 faraday of electrons (1 mole of electrons) can produce which of the following?

○ 1.0 mole of H_2 from H_2SO_4 solution
○ 1.0 mole of O_2 from H_2SO_4 solution
○ 1.0 mole of Cl_2 from NaCl solution
○ 1.0 gram-atom (1 mole of atoms) of Cu from $CuSO_4$ solution
● 1.0 gram-atom (1 mole of atoms) of Ag from $AgNO_3$ solution

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202090

72-73 Report #: RP200
69-70 Report #: U851

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	08-07
69-70 Package-Exercise:	05-09

72-73 National P-val:	
RP200	2.24
69-70 National P-value:	
RP200	4.08

Timing: (in seconds)

	Stimulus:	44
	Response:	35
	I don't know:	5
	Pause:	5
RP200	Exercise total:	89

An object starts from rest and moves with constant acceleration. If the object has a speed of 10 meters per second after 5 seconds, the acceleration of the object is

○ 1m/sec².

● 2m/sec².

○ 5m/sec².

○ 10m/sec².

○ 50m/sec².

○ I don't know.

RP201

261

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 202091

72-73 Report #: RP201
69-70 Report #: U836

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	10-21	02-25
69-70 Package-Exercise:	08-02	
72-73 National P-val:		
RP201	22.68	19.32
69-70 National P-value:		
RP201	26.16	
Timing: (in seconds)		
Stimulus:	25	21
Response:	25	*
I don't know:	5	*
Pause:	6	*
RP201 Exercise total:	61	*

*Time not limited by paced tape.

A meal consists of milk, bread and butter, meat, and cake. To satisfy the rules of good nutrition, what should be added to this meal?

- ● A green or yellow vegetable
- ○ Baked beans
- ○ Cheese
- ○ Coffee or tea
- ○ Pickles and olives

- ○ I don't know.

R6202

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202092

72-73 Report #: RB202
69-70 Report #: U801

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	06-05	06-05
69-70 Package-Exercise:	08-03	
72-73 National P-val:		
RB202	97.21	97.05
69-70 National P-value:		
RB202	98.18	
Timing: (in seconds)		
Stimulus:	18	22
Response:	16	*
I don't know:	5	*
Pause:	5	*
RB202 Exercise total:	44	*

*Time not limited by paced tape.

A copper wire carrying an alternating current is placed near the north pole of a magnet, and the wire vibrates. The wire would NOT vibrate

○ if the wire were made of iron.

● if the wire were connected to a direct-current source.

○ if the temperature of the wire were raised.

○ if the magnet were moved closer to the wire.

○ if the magnet were reversed so that the south pole would be close to the wire.

○ I don't know.

RP203

265

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202093

72-73 Report #: RP203
69-70 Report #: U838

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	04-17
69-70 Package-Exercise:	10-08
72-73 National P-val:	
RP203	23.68
69-70 National P-value:	
RP203	23.03
Timing: (in seconds)	
Stimulus:	26
Response:	22
I don't know:	5
Pause:	6
RP203 Exercise total:	59

A man whose blood type is OA marries a woman whose blood type is OB. Their offspring could NOT have which of the following blood types?

● AA

○ AB

○ OA

○ OB

○ OO

○ I don't know.

R6204

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202094

72-73 Report #: RB204

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

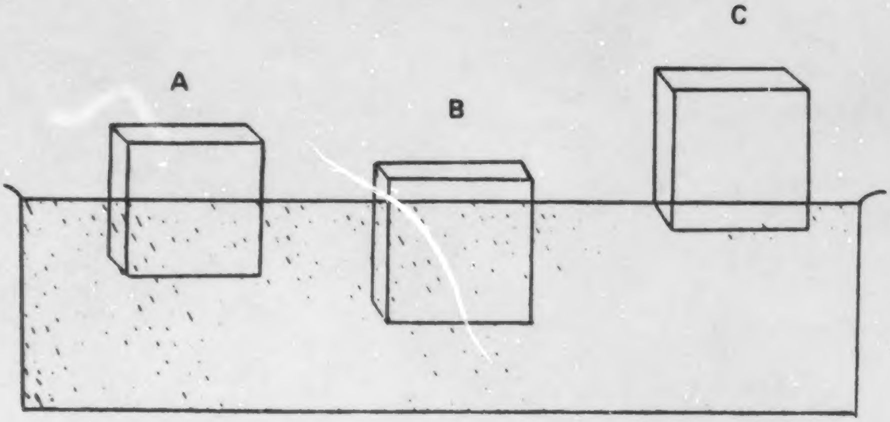
72-73 Subobj: B. Understand and apply laws (principles).

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	Adult
72-73 Package-Exercise:	05-10
72-73 National P-val:	
RB204	47.80
Timing: (in seconds)	
Stimulus:	22
Response:	*
I don't know:	*
Pause:	*
RB204 Exercise total:	*

*Time not limited by paced tape.



The three solid objects shown above have the same volume. If they float as shown in the diagram, which one weighs the most?

○ Object A

● Object B

○ Object C

○ They all weigh the same.

○ It is impossible to tell without additional information.

○ I don't know.

RP205

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 202102

72-73 Report #: RP205
69-70 Report #: R232

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

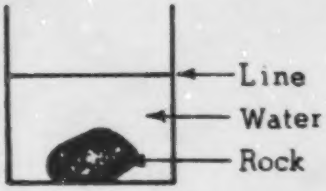
Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-04	01-05
69-70 Package-Exercise:		05-13
72-73 National P-val:		
RP205	81.77	82.91
69-70 National P-value:		
RP205		75.14

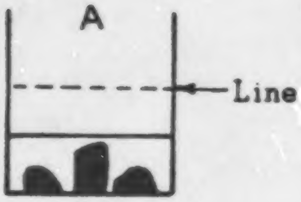
Timing: (in seconds)

	Stimulus:	20	20
	Response:	30	30
	I don't know:	5	5
	Pause:	6	6
RP205	Exercise total:	61	61

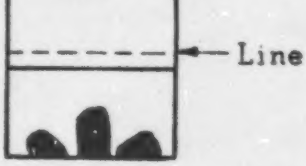

Line
Water
Rock

When a rock is put into a pail of water, the water comes up to the line as the picture above shows. If the rock is broken into three pieces, which of the following pictures shows how high the water is?

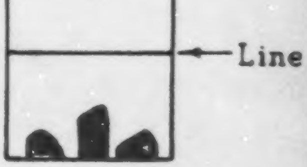
A



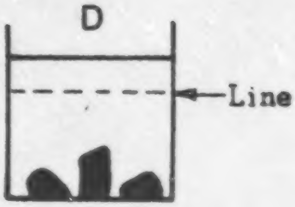
B



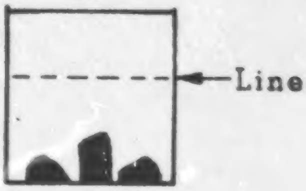
C



D



E



○ A

○ B

● C

○ D

○ E

RP206 ○ I don't know.

242

271

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

NAEP #: 202106

72-73 Report #: RP206
69-70 Report #: R135

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-21	01-20
69-70 Package-Exercise:	02-09	
72-73 National P-val:		
RP206	33.69	63.12
69-70 National P-value:		
RP206	38.20	

Timing: (in seconds)

	Stimulus:	21	23
	Response:	28	27
	I don't know:	5	5
	Pause:	6	6
RP206	Exercise total:	60	61

In terms of the theory of natural selection, what is the explanation of why giraffes have come to have such long necks?

- ○ Stretching to get food in high trees has made their necks longer.
- ○ There is something inside of giraffes which keeps making longer necks.
- ○ Giraffe food contained vitamins which caused the vertebrae to lengthen.
- ○ Giraffe necks have gotten longer and longer as time has gone on, but nobody has any idea why this is.
- ● Giraffes born with the longest necks have been able to stay alive when food was scarce and have passed this trait on to their offspring.

- ○ I don't know.

R8207

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 203022

72-73 Report #: RB207
69-70 Report #: R222, R314

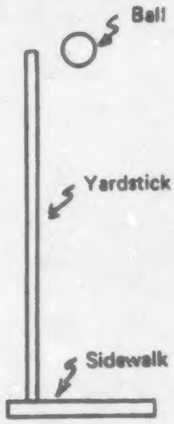
72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: C. Understand and apply conceptual schemes.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

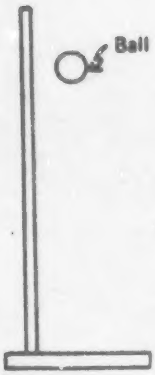
Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

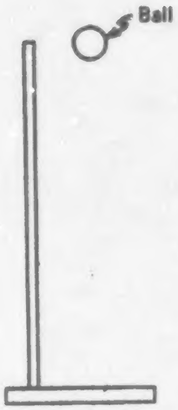
Age:	13	17IS
72-73 Package-Exercise:	07-14	07-24
69-70 Package-Exercise:	08-08	06-04
72-73 National P-val:		
RB207	44.18	55.08
69-70 National P-value:		
RB207	38.43	60.18
Timing: (in seconds)		
Stimulus:	41	39
Response:	23	25
I don't know:	5	5
Pause:	6	6
RB207 Exercise total:	75	75


Ball
Yardstick
Sidewalk

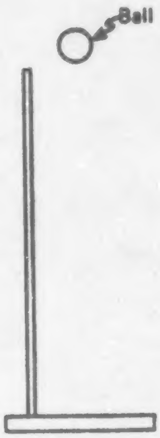
A ball is dropped on the sidewalk from a height of one yard as the picture above shows. Which of the following pictures shows how high the ball could bounce?



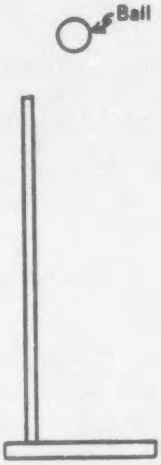
A



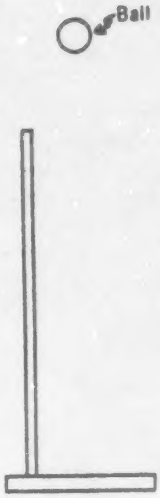
B



C



D



E

● A

○ B

○ C

○ D

○ E

RP2C8

275

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

○ I don't know.

NAEP #: 203023

72-73 Report #: RP208
69-70 Report #: U734

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: C. Understand and apply conceptual schemes.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	02-16
69-70 Package-Exercise:	08-13
72-73 National P-val:	
RP208	40.52
69-70 National P-value:	
RP208	47.48

Timing: (in seconds)

	Stimulus:	19
	Response:	17
	I don't know:	5
	Pause:	6
RP208	Exercise total:	47

Give Handout Number 32: box and flashlight to respondent.

A. Shine the flashlight into the box at the hole (point to hole). Observe what happens. Tell me what you OBSERVE when you shine the light into the box.

____

____

____

____

____

P1: If respondent gives explanation rather than an observation, ask, "CAN YOU ACTUALLY OBSERVE THAT? WHAT CAN YOU ACTUALLY OBSERVE?"

B. What do you think happens INSIDE the box when the light is shined into the box?

____

____

____

____

____

		A		B	
NP	○	○	○	○	○
P1	○	○	○	○	○
0	○	○	○	○	○
		○	○	○	○
			○		○
			○		○
			○		○
			○		○
			○		○
			○		○

RP263

277

8-204001-1.2.3

(Continued)

C. What do you think is in the box? You may lift the box or examine it closely, but do not try to take it apart or look inside.

If respondent attempts to take box apart or look inside, remind him not to do this.

○ Apparatus failed.

C

RP263

NAEP #: 204001

72-73 Report #: RP263

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: D. Understand and apply inquiry skills.

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Professional
Administration Mode: Individual

Age:	9	13	17IS
72-73 Package-Exercise:	09-09	11-03	12-06
72-73 National P-val:			
RP263A	89.94	92.56	93.68
RP263B	5.08	16.71	25.79
RP263C	44.23	55.63	63.20

Timing: No paced tape was used in this individually administered exercise.

Exercise 204001-1,2,3; RP 263

A. What do you observe when you shine the light into the box?

00 = no response

10 = Acceptable (any observation that is legitimate)
It makes a noise. The arrow is turning around.
A little arrow is spinning around.
You can see the light and the thing turning and the hole the light is going into.
It buzzes.
It's turning that (arrow) around. It's turning it that way (to right).
It's spinning around an arrow.

Unacceptable

20 = Unacceptable
It makes a motor run. It makes heat.
Nothing.
The motor comes on.
A motor.
It makes the motor run. (No response, very nervous.)
The light reflects off something to make this turn on--a motor.

39 = I don't know

B. What do you think happens INSIDE the box when the light is shined into the box?

00 = no response

Acceptable

10 = Names or describes photocell and motor, and indicates that the photocell makes a motor run.
Well, the light acts like an energy to a cell which is in there and it puts energy to a motor and the motor turns the wheel.
The light goes through center hole and shines on an electric eye causing an electrical discharge, sending energy to the motor which turns the wheel with the arrow on it.

Exercise 204001-1,2,3 (cont.)

11 = Names or describes photocell, and gives part of the mechanism.
Light hits a solar cell to set off a current.
Light hits a photocell.

12 = Responses definitely referring to a system with light-reflecting surfaces attached to the axle of a wheel, or a Crooke's radiometer.
There's probably a set of four mirrors attached to the axle of the wheel. The light energies reflect on the mirror and the wheel turns.

13 = Other acceptable (Lower level responses which indicate awareness of a mechanism, but incompletely or vaguely described)
Something detects the light and activates the motor.
The light starts a motor.
Light starts a small motor.
Light turns switch on.
Some kind of small motor operates when the light hits it. It is a sensitive switch.

Unacceptable responses

20 = Unacceptable responses (Gives only observations; vague responses; incorrect answers)
The heat goes to something that makes the arrow turn.
I think there is a button and when the light hits it, it turns on some kind of little machine.
There is something in there that reacts to light and makes a buzzing sound.
The light makes something electric in it go.
There's a motor or something in it that causes it to go around. Maybe batteries in it. That's all.
It makes that thing go around.
It probably has some automatic thing when light hits it, it makes a sound and makes the thing (arrow) go around.

39 = I don't know

C. What do you think is in the box?

00 = no response

Acceptable

10 = Specifies battery, photocell, and/or motor--and only lists things that are actually in the box.

Exercise 204001-1,2,3 (cont.)

Batteries or something like that.
A motor.
Engine or motor inside it.
Batteries, wires, that's all.
An engine or something like that. A motor.
There is a motor and some wires. When you shine the light there is a disk that takes the energy and goes through the wire and turns the motor.
Some wire, electric eye, electric engine, some gears and wheels with arrow on it.

11 = Specifies some kind of mechanism not actually in the box, but plausible.
A photoelectric cell.
A generator or something.
Engine.
Four mirrors, a wheel.
Some kind of generator.
A battery, parts(probably metal parts), a generator.

Unacceptable

20 = Does not name a mechanism, or describes a far-fetched one.
Some kind of round thing. It goes back and forth.
A lot of wires. A noise maker.
Wires.
Maybe a fan.
Some kind of machine.
Springs and wheels.
A thing in there like a magnet or something that when the light hits it, it makes an arrow go around.
Bunch of mechanisms.
A lot of nuts & bolts I guess.
Some kind of a machine with gears on it.
Gears.

39 = I don't know

Take out Handout Number 1: 12" ruler and Handout Number 42: tall container of red-colored water, and short container of green-colored water, 2 plastic glasses, graduated cylinder and paper towels.

Give respondent container of red-colored water and container of green-colored water.

Place other materials in front of respondent.

(Point to the container of red water) This is water that has been colored red.

(Point to the container of green water) This is water that has been colored green.

A. Do you think one of the containers has more water in it?

○ Yes (Go to B)

● No (Go to C)

○ I don't know. (Go to C)

○ No response (Go to C)

B. Which container has more water in it?

○ Red

○ Green

○ I don't know.

○ No response

RP264

283

(Continued)

C. Show me how you would find out if one of the containers has more water in it. You may use any of the other things I have given you to find out.

List the steps that respondent uses to test his guess. The listing can be brief, with sketches, if helpful, but all steps should be listed. Note especially whether respondent "eyeballs" water levels. If respondent's own words are used, indicate them with quotation marks.

____

____

____

____

____

P1: If respondent stops ask, "IS THERE ANYTHING ELSE YOU CAN DO TO FIND OUT WHICH CONTAINER HAS MORE WATER IN IT?"

D. Do not probe for changes in respondent's original guess, but record any changes he makes in his first guess below.

○ No change
○ Changed to "red has more"
○ Changed to "green has more"
○ Changed to "the same amount"

C
NP ○ ○○
P1 ○ ○○
0 ○ ○○
○○
○
○
○
○
○
○

RP264

NAEP #: 204002

72-73 Report #: RP264

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Professional
Administration Mode: Individual

Age: 9
72-73 Package-Exercise: 10-06

72-73 National P-val:
RP264A 40.22
RP264C 82.23

Timing: No paced tape was used in this individually administered exercise.

Exercise 204002-1; RP 264

A. Do you think one of the containers has more water in it?

B. Which container has more water in it?

C. Show me how you would find out if one of the containers has more water in it.

00 = no response

Acceptable

10 = Pours green (red) water into one glass and red (green) into another and compares them.
    Pours green into plastic cup # 1. Pours red into plastic cup # 2. Eyeballs levels.
    Emptied green beaker into plastic glass. Emptied red beaker into plastic glass. Measured both glasses with ruler and said, "They are exactly the same."

11 = Pours green (red) water into graduated cylinder, takes a reading; repeats with red (green) water; compares results.
    Emptied beaker of red into plastic glass. Emptied beaker of green into plastic glass. Eyeballed it. Emptied red into graduated cylinder - back to beaker. Emptied green into graduated cylinder. "Same. They are both 40."
    Poured green water into graduated cylinder, measured (eyeballed level) and returned. Poured red, measured and returned. Redid green water.

12 = Pours green (red) water into graduated cylinder, takes a reading; adds red (green) water, takes a reading and sees if first reading = second minus first.
    No sample responses found.

13 = Pours red into plastic glass and compares to green in beaker.
    Poured red into plastic container and compared with green in glass container.
    Poured red into graduated cylinder and read measure. Then did same with green.

Red into glass and eyeballed with green beaker. Red into graduate, measures, back into glass. Green into graduate.
Pours red in glass, sets beside green container. "They're the same."

14 = Other acceptable

Poured red into graduated cylinder, poured green into the red container - then poured red into green container and pointed out that red was same level as green had been.
Poured red water into tall cylinder & said "It's about 40" and pointed to green water & said "It's 100 and the water is about half way, so they're about the same."
Measured the red H_2O in its container, poured it into the glass, poured the green into the small cylinder, measured it, and said "I made a mistake, they are both the same."

Unacceptable

20 = Any unacceptable procedure

Pours green into graduated cylinder.
Pours red into plastic cup, eyeballs levels.
Measures height of red container.
Measures height of green container.
This one (green) is rounder than that one (red).
By looking at it.
This one is skinnier (red) than this (green).

39 = I don't know

Take out Handout Number 29: 3 styrofoam cups, 2 plastic measuring cups, 2 Centigrade thermometers, a plastic bottle containing cold water (the water in the bottle should be as cold as is readily available), a water heater, and a few paper towels. Place all of the materials in front of you.

(Measure out 50 milliliters of the cold water into each of the 2 measuring cups.) I am measuring out 50 milliliters of cold water into each of these two measuring cups. You see the water is equal. (Indicate to respondent that the measuring cups contain the same amount.)

(Pour the water from the measuring cups into 2 of the styrofoam cups.) Now, I will pour the water into each of your cups, and heat the water in the one labeled HOT until it is quite hot.

(Place the water heater into the cup labeled HOT and heat a few seconds until water is hot to the touch.)

(Place the 2 cups before respondent.) The two cups are for you to work with. Remember, the one labeled HOT contains a certain amount of hot water and the one labeled COLD contains the SAME AMOUNT of cold water.

Give respondent the 2 thermometers and the Workbook opened to page 11.

(Continued)

A. I have also given you two thermometers. Do you know how to use a thermometer?

○ Yes (Go to C)
○ No (Go to B)

○ I don't know. (Go to B)
○ No response (Go to B)

B. Show respondent how to use a thermometer. Include: how to hold carefully, insert in water so as not to tip the cup, wait a period of time, and read.

C. Put a thermometer into each cup of water and record the temperatures in Part A and Part B.

After respondent reads and records the temperatures of the hot and cold water, read and record your readings below. If the discrepancy between your readings and respondent's readings exceeds 2 degrees, help respondent to read the thermometers and have him record correct readings.

_____ °C Hot water
_____ °C Cold water

Hot		Cold	
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○

RP265

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(Continued)

D. Did you help respondent read the thermometers?

○ Yes

○ No

E. (Place the third styrofoam cup in front of respondent.) We are going to mix the hot and cold water together in this cup. Tell me in words what the temperature of the mixture will be compared to the temperatures of the hot and cold water.

____

____

____

____

____

P1: If respondent gives a numerical response, record and ask, "WHY DO YOU THINK THE TEMPERATURE WOULD BE (insert respondent's numerical response) DEGREES?" Go to G.

For any other response OR if no response, go to F.

E

NP ○ ○○
P1 ○ ○○
0 ○ ○○
○○
○
○
○
○
○
○

RP265

290

8-204004-1,2,3

(Continued)

F. Use the temperatures you recorded for the hot and cold water to predict the temperature of the mixture. If you want to do any figuring, you may use the space in the Workbook. Put your prediction in Part C.

○ Did not attempt this part of exercise

G. Now pour the hot and cold water into the third cup and record the temperature in Part D.

○ Did not attempt this part of exercise

F	G
○○	○○
○○	○○
○○	○○
○○	○○
○○	○○
○○	○○
○○	○○
○○	○○
○○	○○
○○	○○

RP265

9-204004-1,2,3

A. Temperature of hot water is ____________________ °C.

B. Temperature of cold water is ____________________ °C.

C. I THINK temperature of the mixture will be ____________________ °C.

D. Temperature of the mixture is ____________________ °C.

Use the space below to do any work:

NAEP #: 204004

72-73 Report #: RP265

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: D. Understand and apply inquiry skills.

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Semi-professional
Administration Mode: Individual

Age:	9	13	17IS
72-73 Package-Exercise:	08-10	12-11	12-08
72-73 National P-val:			
RP265E	7.29	21.38	36.46

Timing: No paced tape was used in this individually administered exercise.

Exercise 204004-1,2,3; RP 265

A. Do you know how to use a thermometer?

B. Show respondent how to use a thermometer (if "No" on Part A).

C. Put a thermometer into each cup of water and record the temperatures.

D. Did you help respondent read the thermometers?

E. Tell me in words what the temperature of the mixture will be compared to the temperatures of the hot and cold water.

00 = no response

Acceptable

10 = A temperature in words such as "halfway between hot and cold."
It will be halfway between the two temperatures.
Right numerical answer (± 2 degrees) and because it's half way in between the hot and cold (Probe 1 not used).

11 = An actual number within 2 degrees (either + or -) of the halfway mark with an appropriate reason for temperature given to probe 1 (like category 10) (Go to G).
½ way; average.

12 = Other acceptable
Gives right answer (± 2 degrees) and because it's in between or the hot will warm up the cold.
Gives an answer between the two temperatures but not within 2 degrees of average and because it's halfway in between.

Unacceptable

20 = Somewhere in between; or just gives a number in between.
Lukewarm; warm; cool.

21 = A temperature that is the sum of the two temperatures (words or actual number).
It'll be the sum of the temperatures.

22 = Temperature of the hot or cold water (words or number).
It'll be the same as the hot.

23 = Other unacceptable
About ½; number greater than the hot or less than the cold.

39 = I don't know

Exercise 204004-1,2,3 (cont.)

F. Use the temperatures you recorded for the hot and cold water to predict the temperature of the mixture.

G. Now pour the hot and cold water into the third cup and record the temperature.

Note on Part G: If 99 degrees or above code it 99.
IDK = 99.
Word response (e.g., "warm") = 99.
No response = 00.
If gives number + ½, round to even number.

It has just rained for an hour at your home. You turn on a television and hear the weatherman say, "No rain has fallen in the city today." Explain how he could say that and how you could have seen the rain.

RP255

8-204029-1.2

NAEP #: 204029

72-73 Report #: RP255

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

Science Type: Physical science

Exercise Type: Short answer
Scoring Type: Semi-professional
Administration Mode: Individual

Age:	9	13
72-73 Package-Exercise:	09-11	10-04
72-73 National P-val:		
RP255	51.00	73.94

Timing: No paced tape was used in this individually administered exercise.

Exercise 204029-1,2; RP 255

It has just rained for an hour at your home. You turn on a TV and the weatherman says, "No rain has fallen in the city today." Explain how this is possible.

00 = no response

Acceptable

10 = The television station (or weatherman) is in another city, or other location.
  He's in another city.
  He might live somewhere else.
  I don't live in the city.

11 = The station or weatherman is not informed of all rain in the city.
  He has devices that tell him and he hasn't checked them yet.
  He hasn't checked all over the city - just in his own area.

12 = Report may not be current.

13 = It only rained in part of the city; or the weather station is not in the city.

14 = Other acceptable

Unacceptable

20 = Weatherman might not have seen the rain because of physical conditions.
  Maybe he had dark glass in windows.
  It could have been dark outside where he was.
  He could have been in an airplane above the clouds.
  He might have been wearing sunglasses and couldn't see it.
  It could have been real light rain that he may not have seen.

21 = Weatherman lied.
  He fibbed a little.
  Weatherman didn't tell the truth.

22 = Other unacceptable
  Phone him. Tell him that it rained. Tell him that he made a mistake.
  By my sight. By the clouds. By the house.
  Maybe I was imagining things.
  The weatherman probably made a mistake.

39 = I don't know

Place Handout Number 38: 2 circuit boards with batteries attached, and 4 loose light bulbs in front of respondent and give respondent the Workbook opened to pages 12 and 13, turned sideways. Read all instructions with him before asking him to carry them out.

In front of you are two electrical setups consisting of batteries, wires, light bulbs, sockets, and circuit boards. The batteries and the light bulbs are IDENTICAL. The wiring INSIDE the circuit board is different in each setup.

You are to do an experiment to find how the two bulbs are wired together. However, you are not to take the boards apart. After your experiment, draw the hidden wires on the drawings for setup A and setup B. (Point to the Workbook.) You may do the experiment and draw the wires at the same time if you wish.

P1: If respondent does not attempt to carry out experiment, ask, "WHERE DO YOU THINK YOU MIGHT START?" ○

RP266

(Continued)

If Workbook page is left blank, fill in 1 oval below.

○ Attempted exercise, erased entries

○ Attempted exercise, made no entries

○ Did not attempt exercise

○ I don't know.

A B

RP266

27100

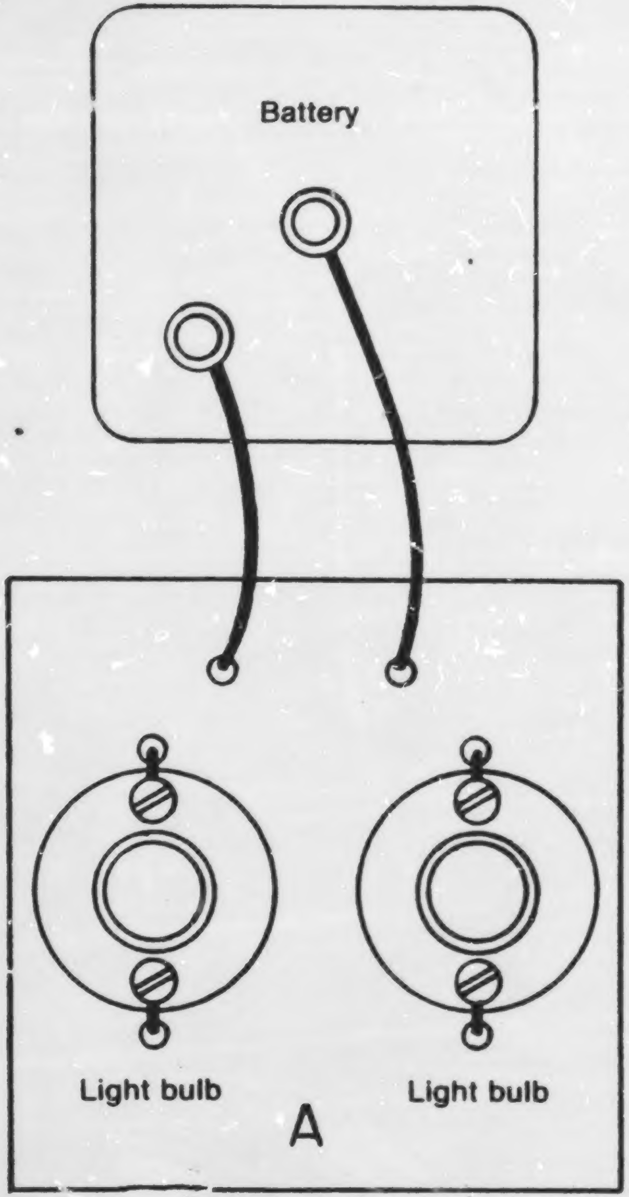
8-204036-3,4

Instruction Sheet

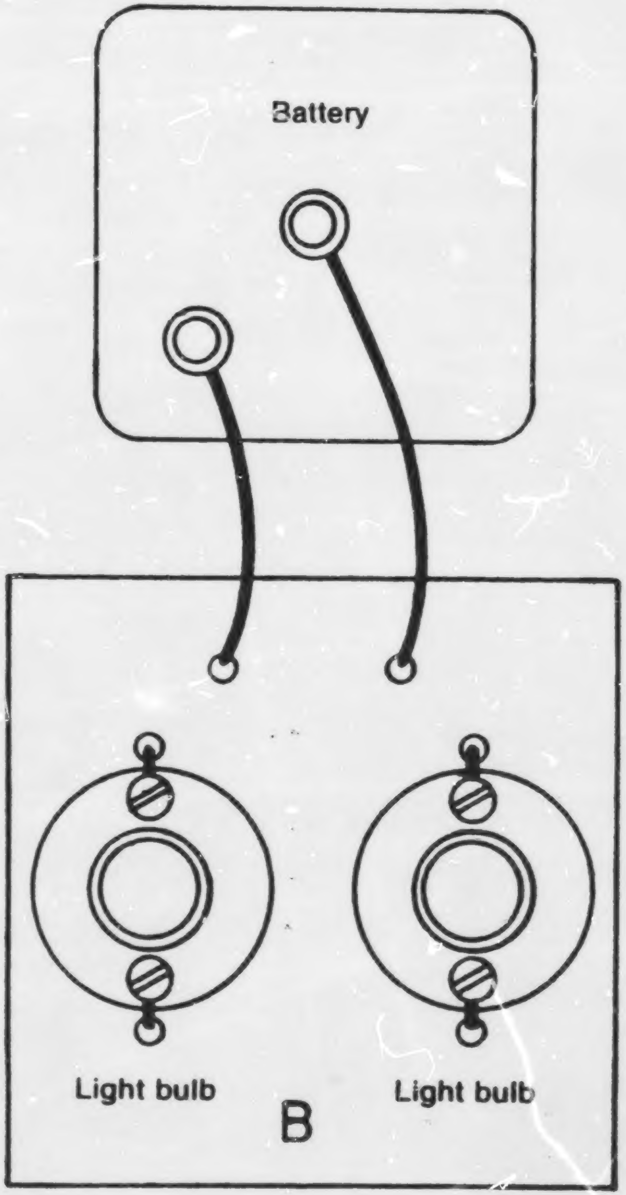
In front of you are two electrical setups consisting of batteries, wires, light bulbs, sockets, and circuit boards. The batteries and the light bulbs are IDENTICAL. The wiring INSIDE the circuit board is different in each setup.

You are to do an experiment to find how the two bulbs are wired together. However, you are not to take the boards apart. After your experiment, draw the hidden wires on the drawings for setup A and setup B. You may do the experiment and draw the wires at the same time, if you wish.

(Continued)


Battery
Light bulb
Light bulb

A


Battery
Light bulb
Light bulb

B

RP266 WORKBOOK PAGE

303

○ I don't know.

304

NAEP #: 204036

72-73 Report #: RP266

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Professional
Administration Mode: Individual

Age:	17IS	Adult
72-73 Package-Exercise:	14-08	04-10
72-73 National P-val:		
RP266A	22.84	28.73
RP266B	17.08	26.51

Timing: No paced tape was used in this individually administered exercise.

Exercise 204036-3,4; RP 266

A. Parallel Circuit

00 = no response

Acceptable

10 = Wired correctly as a parallel circuit.

Unacceptable

20 = Wired as a series circuit.

21 = Other unacceptable

39 = I don't know

B. Series Circuit

00 = no response

Acceptable

10 = Wired correctly as a series circuit.

Unacceptable

20 = Wired as a parallel circuit.

21 = Other unacceptable

39 = I don't know

Place Handout Number 1: 12" ruler and Handout Number 33: graduated cylinder, non-porous rock, spring scales, water in jar, and string in front of respondent. Give respondent the Workbook opened to page 9.

In front of you are a small rock and several pieces of apparatus. You are to use whatever apparatus you find necessary to find the VOLUME of the small rock. List all procedures and record all measurements you make in the Workbook in part A. I will be making the same measurements in the same way that you do. When you have determined the volume of the rock, record your answer in part B.

P1: If respondent does not proceed, say, "THINK OF SOME MEASUREMENTS YOU COULD MAKE WHICH WOULD GIVE YOU THE VOLUME OF THE ROCK." ○

A. Indicate the equipment respondent uses.

Yes	No	
●	○	Graduated cylinder and water
○	●	Graduated cylinder and no water
○	●	Ruler
○	●	Spring scales
○	●	String

(Continued)

B. Indicate each measurement respondent makes. Check each measurement before respondent continues and record your readings below.

Yes	No	
○	○	Initial water volume ____________ ml
○	○	Final water volume ____________ ml
○	○	Other (Specify):

____________ ____________

____________ ____________

____________ ____________

C. Did respondent calculate final volume minus initial volume?

● Yes

○ No

Remember to indicate in Part A all equipment used by respondent.

D. Additional observations

____

____

____

____

____

P M C V

RP267

8-204046-2.3.4

A.

Procedures Used	Measurements

B. The volume of the rock is ______________________________

Use the space below to do any work:

RP267
WORKBOOK PAGE

NAEP #: 204046

72-73 Report #: RP267

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: D. Understand and apply inquiry skills.

Science Type: Physical science

Exercise Type: Apparatus needed
Scoring Type: Semi-professional
Administration Mode: Individual

Age:	13	17IS	Adult
72-73 Package-Exercise:	11-05	13-10	08-11
72-73 National P-val:			
RP267A1	24.75	50.95	42.54
RP267A2	75.82	75.22	76.18
RP267A3	50.05	70.47	70.38
RP267A4	22.26	37.10	32.56
RP267A5	69.77	69.72	70.97
RP267B1	18.96	46.05	38.40
RP267B2	17.81	45.88	37.33
RP267B3	16.22	39.30	35.04
RP267C1	12.24	39.26	33.74
RP267M	14.23	42.15	34.97
RP267C2	11.82	37.05	32.63

Timing: No paced tape was used in this individually administered exercise.

Exercise 204046-2,3,4; RP 267

Ovals for Parts P, M, C and V are available for scoring.
Only Parts M and C used.

Part P: Procedures (not used)

Part M: Measurements

00 = no response - student did not measure water volumes.

Acceptable

10 = Initial water volume and final water volume correct within ± 1 ml. each. (Check student's measurement in workbook with EA's measurement in the package.) (Can make mistake in naming unit).

11 = EA gives initial and final volumes and respondent gives only difference, but data match within 1 ml.

- -

Unacceptable

20 = Either volume correct but not both.

21 = Neither correct.

39 = I don't know

Part C: Calculations

00 = no response

Acceptable

10 = Final water volume minus initial water volume, no math error (using student numbers in workbook).

11 = Final water volume minus initial water volume, math error.

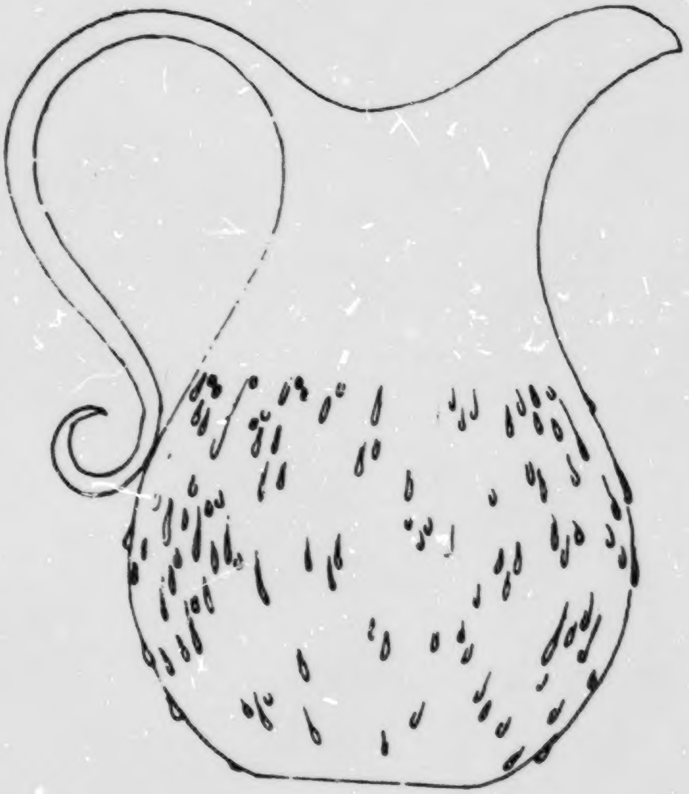
- -

Unacceptable

20 = Unacceptable
Only makes calculations other than volume.

39 = I don't know

Part V: Volume (not used)



The drawing shows a glass pitcher that has been sitting on a table for 20 minutes. Look at the drawing and think about it. Read each of the sentences on this and the following two pages. Using only the evidence shown in the drawing, decide whether the sentence is probably correct, probably false, or whether you cannot tell from the drawing.

A. There is water inside the pitcher.

○ Probably correct

○ Probably false

● Cannot tell

RP256

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

(Continued)

B. The droplets on the side of the pitcher come from the inside.

○ Probably correct

● Probably false

○ Cannot tell

○ I don't know.

C. There is something cold inside the pitcher.

● Probably correct

○ Probably false

○ Cannot tell

○ I don't know.

D. There is something hot inside the pitcher.

○ Probably correct

● Probably false

○ Cannot tell

○ I don't know.

RP256

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

(Continued)

E. Nothing has been poured out of the pitcher.

○ Probably correct
○ Probably false
● Cannot tell

○ I don't know.

F. The pitcher is full of some liquid.

○ Probably correct
● Probably false
○ Cannot tell

○ I don't know.

RP256

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204068

72-73 Report #: RP256

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

Science Type: Physical science

Exercise Type: Multiple part multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-13	07-12
72-73 National P-val:		
RP256A	25.34	25.59
RP256B	41.49	61.31
RP256C	55.44	77.76
RP256D	56.38	73.25
RP256E	34.28	60.46
RP256F	20.34	13.35

Timinq: (in seconds)

RP256	Introduction:	23	26
	Stimulus:	9	9
	Response:	11	8
	I don't know:	5	5
	Pause:	4	4
	Turn page:	(6)	(6)
RP256A	Part total:	29**	26**
	Stimulus:	9	10
	Response:	11	7
	I don't know:	1	1
	Pause:	4	4
RP256B	Part total:	25	22
	Stimulus:	8	10
	Response:	10	8
	I don't know:	1	1
	Pause:	4	4
RP256C	Part total:	23	23
	Stimulus:	8	9
	Response:	11	6
	I don't know:	1	1
	Pause:	4	4
	Turn page:	(5)	(6)
RP256D	Part total:	24**	20**
	Stimulus:	8	8
	Response:	11	7
	I don't know:	1	1
	Pause:	4	4
RP256E	Part total:	24	20
	Stimulus:	8	10
	Response:	11	7
	I don't know:	1	1
	Pause:	6	6
RP256F	Part total:	26	24
RP256	Exercise total:	174	161

**Time to turn page is not included in total times.

To get the salt out of saltwater, one could

○ cool the water.

○ add more water.

● boil away the water.

○ dissolve air in the water.

○ remove all of the air from the water.

○ I don't know.

RP209

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204073

72-73 Report #: RP209
69-70 Report #: U712

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-03
69-70 Package-Exercise:	04-12
72-73 National P-val:	
RP209	72.59
69-70 National P-value:	
RP209	75.96

Timing: (in seconds)

	Stimulus:	13
	Response:	21
	I don't know:	5
	Pause:	6
RP209	Exercise total:	45

Assume that temperature does not change. Which one of the graphs below best shows how the pressure of a sample of gas changes as its volume changes?

○ A

○ B

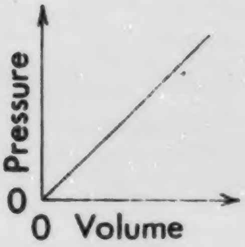
○ C

○ D

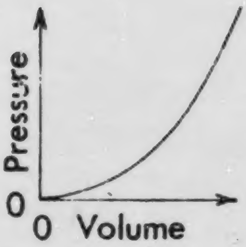
● E

○ I don't know.

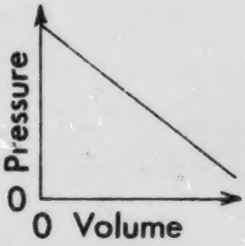
A



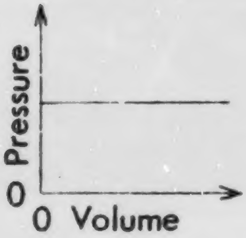
B



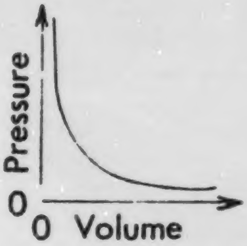
C



D



E



RP210

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204075

72-73 Report #: RP210
69-70 Report #: U841

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

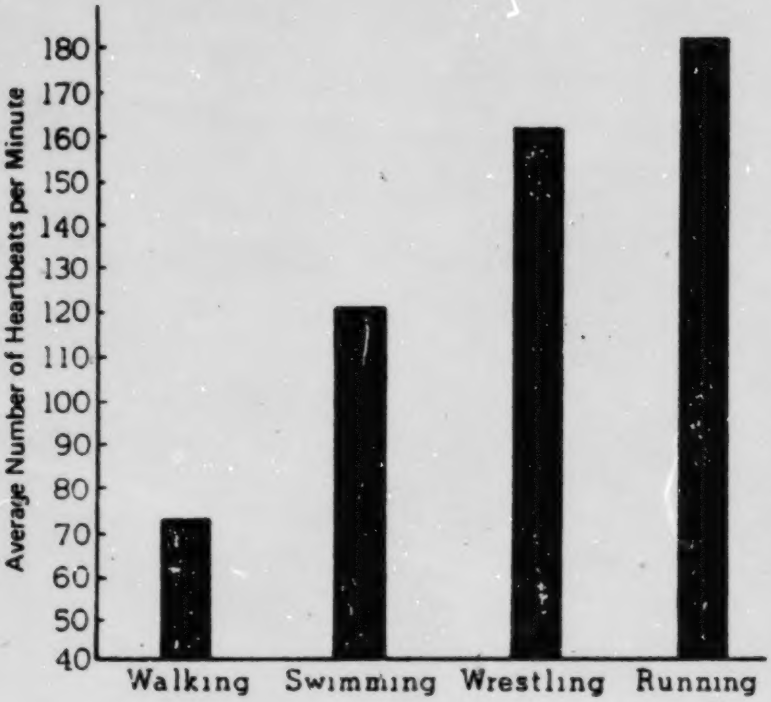
Science Type: Physical science

Exercise Type: Multiple choice using graphs
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	05-03
69-70 Package-Exercise:	08-09
72-73 National P-val:	
RP210	15.16
69-70 National P-value:	
RP210	18.61

Timing: (in seconds)

	Stimulus:	18
	Response:	31
	I don't know:	5
	Pause:	6
RP210	Exercise total:	60



According to the graph above, your heart probably beats fastest when you are

○ **walking.**

○ **swimming.**

○ **wrestling.**

● **running.**

○ **I don't know.**

R8211

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204076

72-73 Report #: RB211
69-70 Report #: U660

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice using graphs
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-21
69-70 Package-Exercise:	01-05
72-73 National P-val:	
RB211	91.39
69-70 National P-value:	
RB211	91.11

Timing: (in seconds)

	Stimulus:	10
	Response:	39
	I don't know:	5
	Pause:	6
RB211	Exercise total:	60

Which of the following would be easiest to measure with a ruler that is 12 inches long?

● The length of a pencil
○ The thickness of a sheet of paper
○ The distance from your home to the school
○ The distance from your home to the nearest grocery store

○ I don't know.

RP212

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204077

72-73 Report #: RP212
69-70 Report #: U664

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	05-24
69-70 Package-Exercise:	01-07
72-73 National P-val:	
RP212	70.20
69-70 National P-value:	
RP212	74.34

Timing: (in seconds)

	Stimulus:	17
	Response:	32
	I don't know:	5
	Pause:	6
RP212	Exercise total:	60

A class decided to show the temperature on each of 3 days. They used the following symbols:

○ for over 80° F

□ for 60° - 80° F

△ for 40° - 60° F

The temperatures on each of three days were:

	Monday	Tuesday	Wednesday
Temperature	85°	84°	55°

Which of the following shows the temperatures?

	Mon.	Tues.	Wed.
○	○	□	△
●	○	○	△
○	○	○	□
○	□	□	△

○ I don't know.

RP213

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204078

72-73 Report #: RP213
69-70 Report #: U672

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

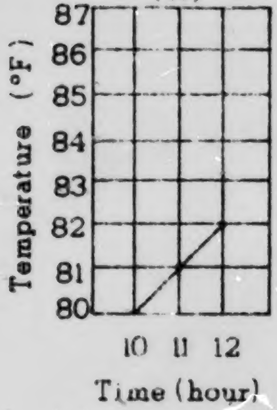
Age: 9
72-73 Package-Exercise: 07-09
69-70 Package-Exercise: 01-14

72-73 National P-val:
RP213 19.13
69-70 National P-value:
RP213 19.26

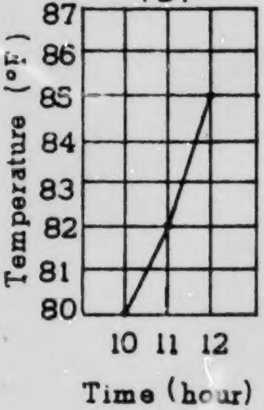
Timing: (in seconds)
Stimulus: 41
Response: 33
I don't know: 5
Pause: 6
RP213 Exercise total: 85

Some children found that the temperature was 80° F at 10 o'clock, 82° F at 11 o'clock, and 85° F at 12 o'clock. Which of the following is the best record of their findings?

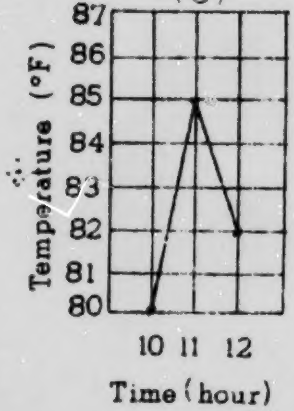
(A)



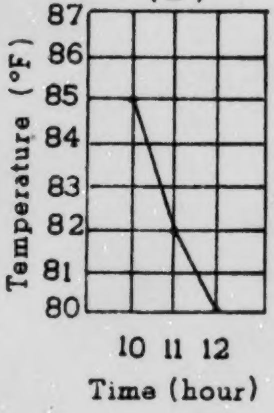
(B)



(C)



(D)



○ A

● B

○ C

○ D

RP214

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204081

72-73 Report #: RP214
69-70 Report #: U671

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

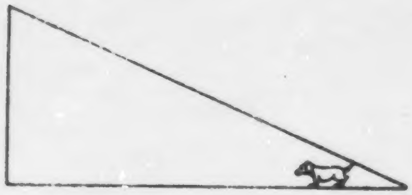
69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using graphs
Scoring Type: Machine
Administration Mode: Group

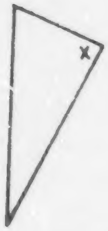
Age:	9
72-73 Package-Exercise:	05-12
69-70 Package-Exercise:	03-18
72-73 National P-val:	
RP214	26.22
69-70 National P-value:	
RP214	31.28

Timing: (in seconds)
Stimulus: 23
Response: 25
I don't know: 5
Pause: 6
RP214 Exercise total: 59

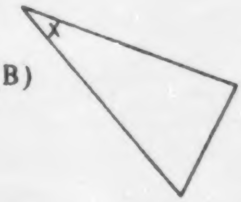


Above is a picture John drew of a dog in a yard. Which of the following pictures shows an x in the same place in the yard as the dog in John's picture?

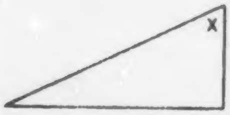
(A)



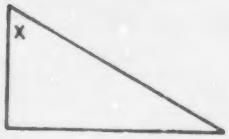
(B)



(C)



(D)



○ A

● B

○ C

○ D

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204083

72-73 Report #: RP215
69-70 Report #: U663

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	04-16
69-70 Package-Exercise:	04-05
72-73 National P-val:	
RP215	82.73
69-70 National P-value:	
RP215	76.17

Timing: (in seconds)

	Stimulus:	17
	Response:	32
	I don't know:	5
	Pause:	5
RP215	Exercise total:	59

Clouds may be high, middle, or low.

High clouds are above 20,000 feet.

Middle clouds are between 6,000 and 20,000 feet.

Low clouds are between the ground and 6,000 feet.

A cloud at 10,000 feet is a

○ low cloud.

● middle cloud.

○ high cloud.

○ I don't know.

RP215

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204084

72-73 Report #: RP216
69-70 Report #: U668

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

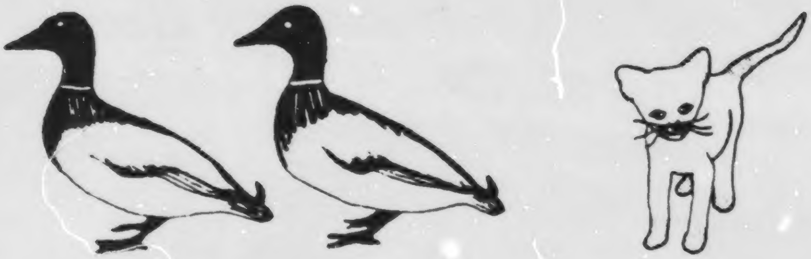
Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 02-34
69-70 Package-Exercise: 05-07

72-73 National P-val:
RP216 58.63
69-70 National P-value:
RP216 63.70

Timing: (in seconds)
Stimulus: 24
Response: 25
I don't know: 5
Pause: 6
RP216 Exercise total: 60



If D stands for duck and C stands for cat, which of the following best represents the picture?

○ D, C, C

○ D, C, D

● D, D, C

○ D, D, D

○ I don't know.

RU217

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204086

72-73 Report #: RU217
69-70 Report #: U661

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 04-26
69-70 Package-Exercise: 05-15

72-73 National P-val:
RU217 89.89
69-70 National P-value:
RU217 87.06

Timing: (in seconds)
Stimulus: 16
Response: 33
I don't know: 5
Pause: 6
RU217 Exercise total: 60

Which of the following is the surest sign that a dog is sick?

○ Its fur is clean.

○ It sleeps at night.

○ It is very playful.

● It has not eaten its food for two days.

○ I don't know.

R6Z1B

304

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 204087

72-73 Report #: RB218
69-70 Report #: U658

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

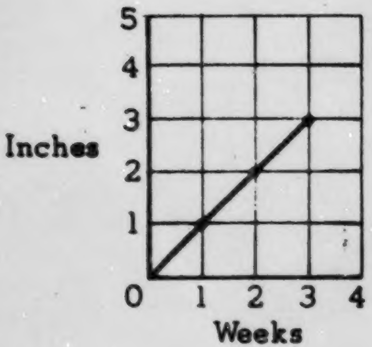
Age:	9
72-73 Package-Exercise:	06-35
69-70 Package-Exercise:	07-07
72-73 National P-val:	
RB218	90.25
69-70 National P-value:	
RB218	95.56

Timing: (in seconds)

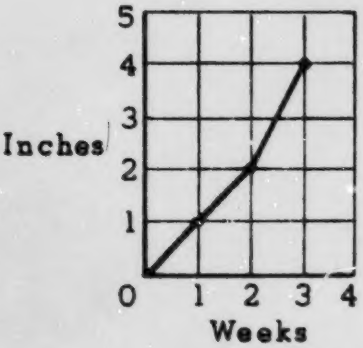
	Stimulus:	13
	Response:	36
	I don't know:	5
	Pause:	6
RB218	Exercise total:	60

A plant grows this way: The first week it is 1 inch high. The second week it is 2 inches high. The third week it is 4 inches high. Which of the following graphs shows this growth?

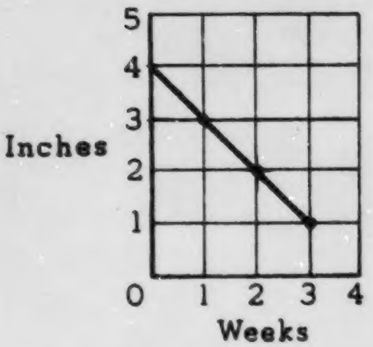
A



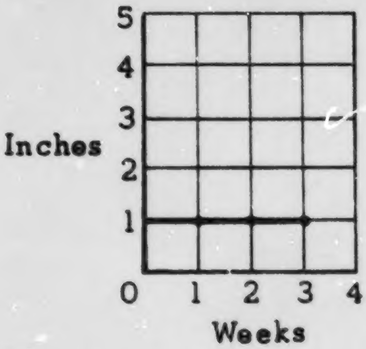
B



C



D



○ A

● B

○ C

○ D

R6219

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204088

72-73 Report #: RB219
69-70 Report #: R151

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice using graphs
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-11
69-70 Package-Exercise:	08-04
72-73 National P-val:	
RB219	55.46
69-70 National P-value:	
RB219	54.43

Timing: (in seconds)

	Stimulus:	20
	Response:	28
	I don't know:	5
	Pause:	7
RB219	Exercise total:	60

In most of the United States, a noon temperature of 30° F is most likely in

● January.

○ May.

○ June.

○ July.

○ I don't know.

RF220

308

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

8-204089-1

NAEP #: 204089

72-73 Report #: RP220
69-70 Report #: U669

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-16
69-70 Package-Exercise: 08-07

72-73 National P-val:
RP220 62.82
69-70 National P-value:
RP220 52.68

Timing: (in seconds)
Stimulus: 12
Response: 36
I don't know: 5
Pause: 6
RP220 Exercise total: 59

Someone said that if you mix salt and sugar with water and let the mixture stand you get saltwater taffy--a kind of candy. Which of the following would be the best way for you to test this idea?

○ Take a vote among your friends.
○ Buy some saltwater taffy and see if it has salt in it.
○ Find out if salt and sugar have the same chemicals in them.
○ Grind up some saltwater taffy to see if you get salt, sugar, and water.
● Try to mix salt, sugar, and water, let them stand, and see what happens.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204090

72-73 Report #: RU221
69-70 Report #: R147

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 05-07
69-70 Package-Exercise: 08-09

72-73 National P-val:
RU221 68.71
69-70 National P-value:
RU221 68.93

Timing: (in seconds)
Stimulus: 37
Response: 37
I don't know: 5
Pause: 6
RU221 Exercise total: 85

If you want to find out how much a person grew in 1 year, which of the following must you know about the person?

- ○ His age
- ○ The type of food he eats
- ● His height at the start of the year
- ○ The height of his mother and father

○ I don't know.

R6222

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204091

72-73 Report #: RB222
69-70 Report #: U665

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

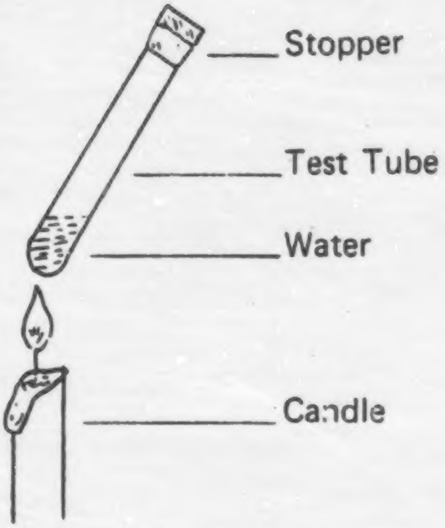
Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-22
69-70 Package-Exercise: 08-12

72-73 National P-val:
RB222 66.36
69-70 National P-value:
RB222 70.32

Timing: (in seconds)
Stimulus: 17
Response: 32
I don't know: 5
Pause: 6
RB222 Exercise total: 60



Water is heated as shown in the diagram above. If the stopper pops out, which of the following is most important in accounting for this?

○ The stopper gets hot and expands.
● Some of the water is changed to steam.
○ The air in the test tube absorbs heat.
○ The glass test tube gets very hot and starts to melt.
○ The glass test tube expands more than the stopper.

○ I don't know.

RP223

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204092

72-73 Report #: RP223
69-70 Report #: U757

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	06-02
69-70 Package-Exercise:	01-06
72-73 National P-val:	
RP223	51.19
69-70 National P-value:	
RP223	52.23

Timing: (in seconds)

	Stimulus:	27
	Response:	38
	I don't know:	5
	Pause:	6
RP223	Exercise total:	76

Which of the following statements is an opinion rather than a fact about cats?

○ Cats eat mice.

○ Cats have fur.

○ Cats have tails.

○ Cats are related to tigers.

● Siamese cats are prettier than other cats.

○ I don't know.

RB224

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204095

72-73 Report #: RB224
69-70 Report #: U750

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 04-01
69-70 Package-Exercise: 03-03

72-73 National P-val:
RB224 70.82
69-70 National P-value:
RB224 79.29

Timing: (in seconds)
Stimulus: 18
Response: 17
I don't know: 5
Pause: 6
RB224 Exercise total: 46

A boy notices that water puddles of the same size last longer in winter than in summer. Which of the following is the best explanation?

- ● Water evaporates faster on hot days.
- ○ Cold water is thick and doesn't run very quickly.
- ○ Water can sink into the ground only in the winter.
- ○ There are fewer winds in summer to interfere with drying up puddles.
- ○ The heat of the summer sun changes water to hydrogen and oxygen gases.

- ○ I don't know.

RP225

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204096

72-73 Report #: RP225
69-70 Report #: U751

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 08-13
69-70 Package-Exercise: 04-08

72-73 National P-val:
RP225 71.28
69-70 National P-value:
RP225 73.38

Timing: (in seconds)
Stimulus: 33
Response: 32
I don't know: 5
Pause: 6
RP225 Exercise total: 76

Of 929 plants, 705 had red flowers and 224 had white flowers. The ratio of red to white flowers is about

○ 700:1

○ 4:1

● 3:1

○ 2:1

○ 1:480

○ I don't know.

RU22 B

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204097

72-73 Report #: RU226
69-70 Report #: U759

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 06-16
69-70 Package-Exercise: 04-11

72-73 National P-val:
RU226 42.85
69-70 National P-value:
RU226 46.97

Timing: (in seconds)
Stimulus: 22
Response: 13
I don't know: 5
Pause: 6
RU226 Exercise total: 46

To determine the average height of 13-year-olds, it would be most important to have a large number of

- ○ scales.
- ○ yardsticks.
- ● 13-year-olds.
- ○ people doing the measuring.
- ○ observers of each measurement.

- ○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204100

72-73 Report #: RP227
69-70 Report #: U754

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	03-27
69-70 Package-Exercise:	09-09
72-73 National P-val:	
RP227	59.04
69-70 National P-value:	
RP227	63.04

Timing: (in seconds)

	Stimulus:	16
	Response:	19
	I don't know:	5
	Pause:	6
RP227	Exercise total:	46

Which of the following is a model rather than an observation?

- ● The center of the Earth is liquid.
- ○ A ship can start from a point, sail around the Earth, and return to the same point.
- ○ The temperature at the bottom of a very deep well is higher than the temperature at the surface.
- ○ The average temperature of the South Pole is lower than the average temperature at the Tropic of Capricorn.
- ○ The top of the sail is the last portion of a ship that can be seen from the shore as the ship sails away from the shore.
- ○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204102

72-73 Report #: RU228
69-70 Report #: U858

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	06-10
69-70 Package-Exercise:	02-06
72-73 National P-val:	
RU228	50.23
69-70 National P-value:	
RU228	56.17

Timing: (in seconds)
Stimulus: 34
Response: 44
I don't know: 5
Pause: 5
RU228 Exercise total: 88

Four of the following are statements of fact. Which statement is a hypothesis?

○ The boiling point of water is 100° C.

○ A gallon of water weighs about 8 pounds.

○ Hydrogen was first prepared by Cavendish in 1766.

○ The Empire State Building is more than 50 stories high.

● The rings of Saturn were formed from a moon that exploded.

○ I don't know.

RU229

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204103

72-73 Report #: RU229
69-70 Report #: U855

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

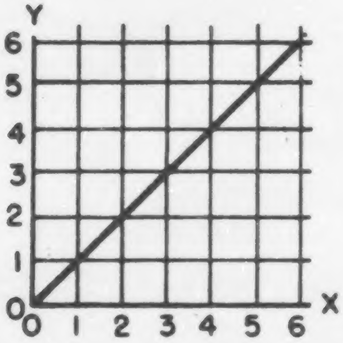
Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	08-29	01-08
69-70 Package-Exercise:	04-02	
72-73 National P-val:		
RU229	61.34	45.27
69-70 National P-value:		
RU229	66.26	
Timing: (in seconds)		
Stimulus:	27	30
Response:	22	*
I don't know:	5	*
Pause:	6	*
RU229 Exercise total:	60	*

*Time not limited by paced tape.

Which of the following equations represents the graph below?



● $Y = X$
○ $Y = aX^2$
○ $Y = 2X$
○ $YX = 1$
○ $X^2 + Y^2 = 1$

○ I don't know.

RP230

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204105

72-73 Report #: RP230
69-70 Report #: U853

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

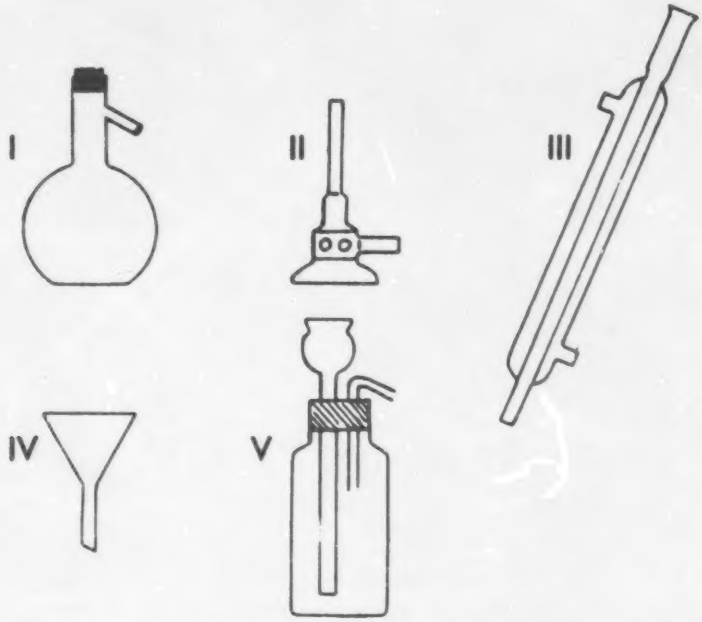
Exercise Type: Multiple choice using graphs
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	09-15
69-70 Package-Exercise:	06-14
72-73 National P-val:	
RP230	70.79
69-70 National P-value:	
RP230	73.38

Timing: (in seconds)

	Stimulus:	19
	Response:	44
	I don't know:	5
	Pause:	6
RP230	Exercise total:	74

Pictured below are pieces of laboratory equipment.



To obtain pure water from salt water, which of the pieces shown above would be most useful?

- ○ II and V
- ○ III and V
- ● I, II, and III
- ○ I, IV, and V
- ○ III, IV, and V

- ○ I don't know.

RP231

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204106

72-73 Report #: RP231
69-70 Report #: U864

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	08-13
69-70 Package-Exercise:	07-02
72-73 National P-val:	
RP231	20.51
69-70 National P-value:	
RP231	26.14

Timing: (in seconds)

	Stimulus:	20
	Response:	29
	I don't know:	5
	Pause:	6
RP231	Exercise total:	60

A farmer has two corn fields of equal size. One yields 1,000 bushels of corn and the other yields 2,000 bushels of corn. Suggest four hypotheses (ideas) that could be tested to explain the difference in yields.

(1) ______________________________

____

____

(2) ______________________________

____

____

(3) ______________________________

____

____

(4) ______________________________

____

____

(1) (2) (3) (4)

R624B

332

363

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204107

72-73 Report #: RB249
69-70 Report #:

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple part short answer
Scoring Type: Professional
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	11-28
69-70 Package-Exercise:	08-20
72-73 National P-val:	
RB249-1	79.10
RB249-2	74.80
RB249-3	69.33
RB249-4	60.49
69-70 National P-value:	
RB249-1	***
RB249-2	***
RB249-3	***
RB249-4	***

Timing: (in seconds)

	Stimulus:	25
	Response:	474
RB249	Exercise total:	499

***Acceptable/Unacceptable data is not available at this time.

Exercise 204107-3; RB 249

A farmer has two corn fields of equal size. One yields 1,000 bushels of corn and the other yields 2,000 bushels of corn. Suggest four hypotheses (ideas) that could be tested to explain the difference in yields.

00 = no response

Acceptable

10 = Soil differed.
Minerals in soil were different.
Different crops grown the year before. In one he rotated crops.

11 = Care of the two fields differed.
He fertilized one.
He sprayed one.
In one he used contour planting.
He used different planting methods.
He took good care of one, and just let the other one go.

12 = Amount of water or rainfall differed.
One was irrigated.

13 = Amount of sunshine differed.

14 = Used different types of seed.

15 = Planted more seeds in one field.
Planted seeds farther apart in one field.
Planted more rows of corn in one.

16 = One field was harmed by insects or other animals, or weeds, or disease.
(Cows, moles, bugs, birds, etc. One had more weeds than the other.)

17 = Planted them at a different time.

18 = Location of the fields made the difference.
Climate was different for one.
Weather was different.
One was in a different part of the country.

19 = Other acceptable.
Terrain or slope of the land was different. One field was on a hillside.
Destruction by the elements - wind, rain, fire, etc.

- -

Exercise 204107-3 (cont.)
Unacceptable

20 = One field was larger.
One field had a greater area.
One field was longer or wider.

21 = Other unacceptable.
Corn stalks were higher in one field.
Size of the bushels was different.
2000 - 1000 = 1000

39 = I don't know.

Describe a way to test whether it pays to buy premium gasoline for a second-hand car.

AP250

336

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

367

NAEP #: 204109

72-73 Report #: RP250
69-70 Report #: U881

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Short answer
Scoring Type: Professional
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	04-29	05-32
69-70 Package-Exercise:	09-20	
72-73 National P-val:		
RP250	34.96	40.41
69-70 National P-value:		
RP250	49.02	
Timing: (in seconds)		
Stimulus:	9	5
Response:	477	*
RP250 Exercise total:	486	*

*Time not limited by paced tape.

Exercise 204109-3,4; RP 250

Describe a way to test whether it pays to buy premium gasoline for a secondhand car.

00 = no response

First Column of Ovals.

Experimental Ideas

1. Measure compression or compression ratio.
2. Look for damage to motor: damage in combustion chamber (spark plug life, valves, etc.)
3. Check performance: engine starting, acceleration, spark plug detonation, (ping, knock)
4. Measure mileage
5. Check engine characteristics: size, number of cylinders, etc. (except compression)
6. Other tests

Non-Experimental Tests

7. Ask someone or look it up (car dealer, mechanic, manual, previous owner)
8. Expresses opinion without mentioning or inferring test.

9 = Other responses

(I don't know = 99)

Second Column of Ovals

Quality of Response

1. High quality answer including cost factors.

   - Mentions test
   - Tells how to test it
   - Mentions controlling conditions in mileage
   - Relates results to cost

2. High quality answer but no discussion of cost factors.

   (Same as #1 without cost.)

3. Correct answer but incomplete, including cost factors.
4. Correct answer but incomplete, does not consider cost.
5. Very incomplete answer. Mentions idea only with no detail.

   Ex: "Check the mileage."
   "Check the performance of your car with regular."
   "Check the size of the motor."
   "See if regular gasoline damages your motor."

6. Some parts of answer incorrect or confused.
7. Nonsense or no information (ex. NR)

Exercise 204109-3,4 (cont.)

Note: After scoring the exercise using the two-column method as outlined on the previous page, the following changes were made to the category numbers, making a three-digit category system.

00 changed to 000 (no response)

Acceptable

11-14 changed to 101-104

21-24 changed to 105-108

31-34 changed to 109-112

41-44 changed to 113-116

71-74 changed to 117-120

Unacceptable

15-17 changed to 250-252

25-27 changed to 253-255

35-37 changed to 256-258

45-47 changed to 259-261

51-57 changed to 262-268

61-67 changed to 269-275

75-77 changed to 276-278

81-87 changed to 279-285

91-97 changed to 286-292

99 changed to 399

The following examples of responses are based on the original two-digit category system.

Exercise 204109-3,4 (cont.)

High Quality Response (category 1 or 2)

Compression: Check the compression of your motor. To do this you take out the spark plug and insert a compression gauge in one of the openings. Turn on the starter and read the gauge.
Measure the compression ratio of the engine. This could be done by measuring the volume of a cylinder at the bottom and the top of its stroke and taking the ratio.

Damage to motor: This response will probably never occur.

Performance: If it knocks when you accelerate (or go up a hill) with regular in the tank, but not with premium, you should use premium gas.

Mileage: Fill your car with a tank of premium gas and see how many miles you go on it. Then fill your car with a tank of regular and check how many miles you get. Be sure to do the same kind of driving in each case (highway or in-town).

Try equal amounts of regular and premium gasoline (for example 1 gallon) in your car and see how far you can go before you run out. You have to do the same kind of driving in each case.

Engine characteristics: will probably never occur.

Correct answer but incomplete (category 3 or 4)

Compression: Check the compression. If it is high, it takes premium gasoline.
Measure the compression.
Measure the compression ratio of the car.

Damage to motor: Look for damage to the valves when you use regular.

Performance: See if it knocks with regular.
If it knocks when you're going up a hill when you have regular in the tank, you should use premium.

Mileage: Check the mileage with regular and with premium and compare.
Fill your tank with regular and measure the mileage. Then fill your car with a tank of premium and measure the mileage.

Engine characteristics: Check size of the motor. If it is V-8 it probably takes premium, if it is a 6 cylinder it probably takes regular.

Exercise 204109-3,4 (cont.)

Some parts of answer incorrect or confused (category 6)

Damage to motor: See if premium damages your engine. If so, use regular.

Performance: See if it runs good with premium.

Mileage: Take two cars. Put premium in one and regular in the other. See which gets the best mileage.

Engine characteristics: Check the type of motor in your car. V-8's always take premium and 6 cylinders take regular.

Exercise 204109-3,4

Additional Examples

1 = Measure compression or compression ratio

12 Take a compression tester and check how high compression each cylinder has by pulling the plugs and cranking the engine 10 times. If the gauge reads a high level it would be best to use premium gas. If it's a bomb, burn anything.

2 = Look for damage to motor: damage in combustion chamber (spark plug life, valves, etc.)

24 You can tell by whether the spark plugs get gummed up on either kind. It really won't hurt a car for a while so you can try both kinds. When you put in regular and it clogs up the spark plugs, you need to use premium.

25 You could read owner's manual whether or not you could use high octane. You could ask a competent mechanic whether or not it is plausible. You could tear the engine apart and look at the valves, rings, and pistons , and see if they are carboned up. Then determine if they need to be using a higher octane in order to burn cleaner and more effeciently.

3 = Check performance: engine starting, acceleration, spark plug detonation (ping, knock)

31
1. Use all the gas in the car.
2. Fill the tank with premium gas.
3. Drive the car & measure its performance in terms of miles driven/gal, pinging, acceleration, ease of starting, etc.
4. Repeat steps 2 & 3 until performance is well known, i.e., until performance measurements are consistent.
5. Repeat steps 1 thru 4 with a lower grade of gas.
6. Compare the measured performances & decide if there is an increased performance with premium that justifies its cost. If, for example, miles/gal is the only measure, compare the cost of driving a mile in both cases & choose the gas with the lower operating cost.

32 Put regular gasoline in the car and take it out for a run. If on fairly hard pulls it "pings" with a slight valve noise and doesn't seem to have all the power it should, try premium gasoline. If under the same circumstances, there is no "ping" with the premium gas, it would pay to buy the premium.

Exercise 204109-3,4

Additional Examples (cont.)

34 From my point of view the only way to test which kind of gasoline to use is try each one of them for a while. Have a check up after running each kind of gas for a certain amount of time. If the car runs smoother and better with premium I would suggest that. If the car runs approx. the same I would suggest burning regular.

34 First fill your tank with regular gasoline & ride in it, then fill your tank with premium gasoline & compare the performances. If the pick up & sound of engine & smoothness in ride changes at all, you will know if it pays or not.

35 First, I'd try at least a gallon, then I would drive and see how good the mileage is. I'd see if it made the engine run better or smoother, and if everything went fine I'd try more.

35 Try the premium to see if your car's performance is better.

36 Go and buy the premium gas and put it in a secondhand car and see how it runs.

4 = Measure mileage

41 By finding how far the car will go on one kind of gasoline per gallon and then finding how far it goes on premium gasoline under the same conditions. Then find the price per mile for each. Just to be sure that premium is cheaper, this test should be tried for several different kinds of gasoline.

42 Fill up the car with premium gasoline and take down the mileage on what the car registers at that time. Then drive the car until it reaches empty and take down this mileage on what the car registers. Subtract the first mileage from the second mileage and you find how far it took you. Then fill the car with another type of gas and repeat this procedure. Compare the miles travelled with premium gas with the miles travelled with another type of gas. Which ever gasoline took you further is the gas to buy. But driving conditions for each type of gasoline must be the same.

43 Start out with an empty tank, check the miles on your car, and go fill it up with premium. When it runs out, figure out how many miles you got to the gallon. Do the same with regular gasoline. If you get slightly more with premium, figure out how much money it cost you to go a set distance with premium, then with regular. It might be cheaper to buy regular even though you don't get quite as many miles.

Exercise 204109-3,4

Additional Examples (cont.)

44 Buy premium gas and take the average mileage on a ½ of tank. Then buy another type of gas and take the average mileage on a ½ of tank. The one with the highest average is the most economical.

44 I would buy a full tank of premium gas and watch my mileage for that tank. I would then buy regular gas and do the same. If I found that I got many more miles per gallon for premium gas, I would buy it. But if there wasn't much difference I would use regular.

44 Put premium gas in the used car and check mileage against non premium.

45 See how many miles you get to the gallon.

45 I would ask the past owner what type of gas he used. It is best to use the same type usually. If there wasn't any way of finding out what the past type was, I would experiment to see if I got good mileage & a clean engine. Also, if I got engine trouble I could guess that it's maybe the premium gas, or not.

46 Keep track of how much the gas costs and how many miles you get per gallon. Compare this to another secondhand car in pretty much the same condition that is running on regular and compare the two.

5 = Check engine characteristics: size, number of cylinders, etc. (except compression)

55 It depends on what type of engine & size of engine involved whether it would be sufficient or profitable to use a premium gas.

55 It depends on the type of car and how the carburetor is set for the car to run best.

56 This would depend on the size of the engine and how much equipment is run by the engine. Normally a car would perform better and longer with premium gas which costs more - but in the long run would possibly save on repairs.

56 It would depend on the size of the engine and how worn the engine is.

6 = Other tests

65 Try each gasoline in the car: which one sounds and rides the best is the one.

Additional Examples (cont.)

65 Fill it up with regular and push the gas pedal to the floor.

67 By testing it on your own car and by buying a secondhand car similar to your first, you can determine how the premium gas is going to work.

67 If smoke comes from the tail pipe you do not need premium gasoline because it is running too rich.

7 = Ask someone or look it up (car dealer, mechanic, manual, previous owner)

74 Check with the manufacturer to learn the compression ratio of the engine. This will determine whether a higher octane gas is required.

75 Find out what the person who owned it first used.

77 Call up the company and ask.

8 = Express opinion without mentioning or inferring test

86 It pays to buy a premium gasoline for a secondhand car because it needs it. You shouldn't buy the most expensive. The car is not worth it.

86 Your car will be in better condition. It will run smoother and last longer. But it also depends if the secondhand car is running in good condition. People often say that premium is better than regular gasoline.

86 It will make a cheap car run better.

86 Premium gas is better for any kind of car.

87 I think it does pay to buy premium gasoline for a secondhand car, because it may be in good condition so it might need a more expensive gas.

9 = Other responses

99 I'm sorry but I didn't understand the last question. There are some words I don't know and the meaning is hard for me to understand.

Exercise 204109-3,4

Additional Examples (cont.)

99 I have no idea.

99 = I don't know

Since air is colorless, odorless, and tasteless, how can one show that it exists?

RP251.

347 STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204110

72-73 Report #: RP251
69-70 Report #:

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Short answer
Scoring Type: Professional
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	03-29
69-70 Package-Exercise:	10-20
72-73 National P-val:	
RP251-1	37.92
RP251-2	26.01
RP251-3	12.47
69-70 National P-value:	
RP251-1	***
RP251-2	***
RP251-3	***

Timing: (in seconds)
Stimulus: 14
Response: 593
RP251 Exercise total: 607

***Acceptable/Unacceptable data is not available at this time.

Exercise 204110-3; RP 251

Since air is colorless, odorless, and tasteless, how can one show that it exists?

00 = no response

40 = other unacceptable

39 = I don't know.

Note: We are using an imaginary 4 oval on each column that is printed 0-3. Single column of ovals not used.

Otherwise: First column of ovals:

1 = Gives an acceptable idea PLUS either a control or a scientific explanation.

2 = Gives a complete idea or specific effect. Tells you the experiment to do which, if basic facts are known, or control is done, will give proof.

3 = States a true fact about air which, if an experiment is devised, will tell. OR Gives a specific effect with incorrect explanation.

Second column:

0 = Air occupies space and exerts pressure in closed containers.

1 = Air has weight and mass.

2 = Effects of relative motion of air and objects.
Note: only give one credit for each of these lines -

Wind moves leaves, kites, etc.
Flying of airplanes.
Can hear the wind or the movement of objects the wind hits.
Can feel air hitting on body - arm out a car window, throat during breathing, etc.
Air resistance slows down moving objects.

3 = Air suspends small particles.
Carries smells.
Holds smog particles. Can see dust in a ray of light. Clouds stay up.

4 = Air transmits energy.
Sound is carried by air.
Heat may flow via air.

5 = Air is involved in chemical reactions.
Air is used in combustion.
Can chemically determine the components of air.

Exercise 204110-3 (cont.)

6 = Air is necessary for breathing or for life.

7 = Air effects due to physical changes.
A heated balloon rises.
Air can be liquified.
You can see your breath on a cool morning or condensation on a mirror, etc.

8 = Other

Note: After scoring the exercise using the two-column method as outlined on the previous page, the following changes were made to the category numbers, making a three-digit category system for each response classified.

00 changed to 000 (no response)

Acceptable

10-18 changed to 101-109

20-28 changed to 110-118

- -

Unacceptable

30-38 changed to 250-258

39 changed to 399 (I don't know)

40 changed to 259 (other unacceptable)

The following examples of responses are based on the original two-digit category system.

Example responses

Air occupies space and exerts pressure in closed containers.

10. Blow up a balloon. Since the walls have expanded, something had to exert pressure on them.
    Turn over an empty glass and immerse it in water. Since the water doesn't go into the glass, something already in the glass is occupying the space.

20. Blow up a balloon.
    Turn a glass over and immerse it in water.
    You can measure air pressure with a manometer or a pressure gauge.
    If you remove the air from a container, the walls will collapse.
    If you blow out through a straw underwater, bubbles will form and rise.

30. Air occupies space.
    Air has volume.
    There is air in basketballs.
    You can measure air pressure. Air has pressure.

Air has weight and mass.

11. An inflated object weighs more than the same object with no air inside.

31. Air has weight.
    Air has mass.

Effects of relative motion of air and objects.

12. Drop a feather and a rock from the same height. In a vacuum they will fall at the same speed, in air the rock will hit first.
    Air causes a moving object to slow down, due to the friction between the object and the air particles it hits.
    Air is necessary for planes to fly. Since air has to travel farther over the wing than under it, the pressure on the wing is less on the top, thus providing lift.

22. Wind moves leaves.
    When you stick your arm out a car window, you can feel the air hitting your body.
    Air causes moving objects to slow down.

32. You can feel air (note - not wind).
    Because of the wind.
    Air has friction.

Air suspends small particles.

13. Smog is caused by pollution particles being suspended in the air. If there were no air the particles would fall to the ground.

23. Air keeps clouds up in the sky.
You can see dust in a ray of light.
You can see smog, which is caused by pollution particles being suspended in the air.

33. Air carries smells.
Around a baking cake you can smell the air.

Air transmits energy.

14. Ring a bell in a closed jar. You can hear the sound. Now pump out the air and ring the bell again. This time you won't be able to hear it.
You cannot hear noise made by an object in a vacuum, because sound can only be transmitted through some medium.

24. (No examples)

34. Air carries sound.
Air currents carry heat.

Air is involved in chemical reactions.

15. Light a match in a closed container. It will go out after a short period of time. If you light a match in a container where air is available, it will continue to burn.
A lighted match will not burn in a vacuum or a closed container, because the oxygen in air is used for combustion.

25. A lighted match will not burn in a closed container very long.
You can chemically determine the components of air.

35. Air is made up of various chemical elements.
Air is necessary for combustion.
A lighted match will go out in a closed container, because all the air gets used up.

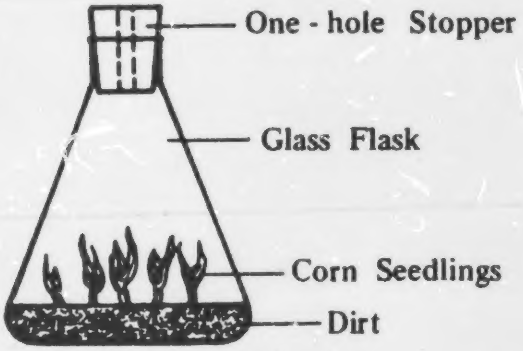
Air is necessary for breathing or life.

16. If a person is put in a closed container, he will die, because oxygen is necessary to keep him alive.
Put one person in a closed room, the other in a room with ventilation. One will die or at least faint, and the other one will not be affected.

26. If an animal is put in a closed container, it will die.
Without air you would die, since you have to have oxygen for breathing.

36. Since you're living, you know that air exists.
Air is necessary for breathing.
Without air you would die.

Corn is planted in a flask as shown below. The flask is weighed each day for three weeks. The flask shows a daily weight loss. Which of the following is the best explanation of this loss of weight?



○ The original water evaporates within the first day.

○ Carbon dioxide is lighter in weight than ordinary air.

○ Seed material is changed to leaves and roots that weigh less.

● The seedlings use starch in the seeds and give off gases that escape.

○ Dry air enters through the stopper and replaces the moist air in the flask.

○ I don't know.

R8232

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204111

72-73 Report #: RB232
69-70 Report #: R347

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	17IS
72-73 Package-Exercise:	07-08
69-70 Package-Exercise:	11-03
72-73 National P-val: RB232	20.00
69-70 National P-value: RB232	19.58

Timing: (in seconds)

	Stimulus:	39
	Response:	24
	I don't know:	5
	Pause:	6
RB232	Exercise total:	74

A car stops at a traffic light and the engine stops running. The engine will not start again.

Suggest three reasons why it will not start again.

(1)

(2)

(3)

(1) (2) (3)

RP252

356

386

8-204112-3

NAEP #: 204112

72-73 Report #: RP252
69-70 Report #: R339

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple part short answer
Scoring Type: Professional
Administration Mode: 72-73:Individual/69-70:Group

Age:	17IS
72-73 Package-Exercise:	14-02
69-70 Package-Exercise:	13-20
72-73 National P-val:	
RP252-1	85.24
RP252-2	72.79
RP252-3	57.91
69-70 National P-value:	
RP252-1	***
RP252-2	***
RP252-3	***

Timing: No paced tape was used in this individually administered exercise.

***Acceptable/Unacceptable data is not available at this time.

Exercise 204112-3; RP 252

A car stops at a traffic light and the engine stops running. The engine will not start again. Suggest three reasons why it will not start again.

Note to scorers: We assume the car was O.K. just before it stalled.

00 = no response

10 = Out of gas.

11 = Engine is flooded.

12 = Other fuel system problems.
    Vapor lock.
    Carburetor faulty.
    Choke stuck.
    Idle setting improper.
    Engine cold.

13 = Battery dead. Battery run down.

14 = Other problems in electrical system.
    Spark plugs faulty.
    Ignition system faulty.
    Distributor faulty.
    Break in an electrical circuit.
    Engine wet. Going through puddle.

15 = Mechanical failure.
    Key stuck in ignition switch.
    Frozen pistons.

16 = Car is not in neutral or park; clutch is not depressed.
    Car is in gear.

17 = Other faulty driver problem (must state the problem)

18 = Other acceptable.

19 = Engine overheated.

- -

20 = Other unacceptable.
    Engine is dead.
    Car has stalled.
    Bad driver.
    Won't go into first gear.
    Radiator broken.
    Out of oil.

39 = I don't know.

Some children were trying to find out which of three light bulbs was brightest. The children said the following things. Which of these gives the best start toward finding the answer?

○ One bulb looks brightest to me so I already know the answer.

○ All the bulbs look bright to me so there can't be an answer.

● It would help if we had a way to find the brightness of a light bulb.

○ Let's take a vote, each person will vote for the bulb he thinks is the brightest.

○ I don't know.

RU233

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 204113

72-73 Report #: RU233
69-70 Report #: U676

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-25	01-23
69-70 Package-Exercise:	04-08	
72-73 National P-val:		
RU233	37.23	68.38
69-70 National P-value:		
RU233	41.67	

Timing: (in seconds)

		9	13
	Stimulus:	30	31
	Response:	19	18
	I don't know:	5	5
	Pause:	6	6
RU233	Exercise total:	60	60

John has a flat tire on his bicycle. He pumps the tire up with an air pump and begins to ride. In a few minutes the tire is flat again. To fix his tire, John must find

○ a better air pump.

○ whether the tire is made of rubber.

● where the air leaks out of the tire.

○ how many minutes it takes the tire to go flat.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204124

72-73 Report #: RP234
69-70 Report #: R146

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Physical science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-06	01-06
69-70 Package-Exercise:	02-01	
72-73 National P-val: RP234	87.78	97.42
69-70 National P-value: RP234	75.74	

Timing: (in seconds)

	Stimulus:	24	25
	Response:	25	25
	I don't know:	5	5
	Pause:	6	6
RP234	Exercise total:	60	61

A doctor kept records of breathing rates of people when they were resting.

He made the chart below.

BREATHING RATES

Person	Breaths in a minute
Baby boys	38
7-yr.-old girls	25
7-yr.-old boys	25
10-yr.-old boys	20
Mothers	16

The chart suggests that

○ boys breathe faster than girls.
○ girls breathe faster than boys.
○ older people breathe faster than younger people.
● younger people breathe faster than older people.

○ I don't know.

R8235

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204128

72-73 Report #: RB235
69-70 Report #: R148

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

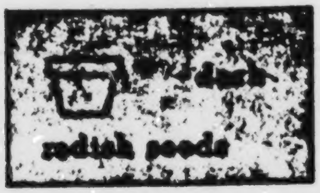
Exercise Type: Multiple choice using table
Scoring Type: Machine
Administration Mode: Group

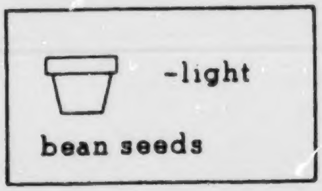
Age:	9
72-73 Package-Exercise:	06-20
69-70 Package-Exercise:	07-13

72-73 National P-val:
RB235 66.23
69-70 National P-value:
RB235 66.96

Timing: (in seconds)
Stimulus: 27
Response: 22
I don't know: 5
Pause: 6
RB235 Exercise total: 60

Tom wanted to find out whether plants can grow better in the dark or in the light. He put a pot with 6 radish seeds in a dark room and a pot with 6 bean seeds on the window sill.





He added the same amount of water to both pots. The bean seeds grew better than the radish seeds, so Tom said his plants grow best in the light.

To be able to say this, he should have

○ watered both pots more.
○ watered the radish seeds more.
● put the same kind of seeds in both pots.
○ grown the seeds in water instead of soil.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 204137

72-73 Report #: RB236
69-70 Report #: R133

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Science Type: Biological science

Exercise Type: Multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-23	01-22
69-70 Package-Exercise:	02-15	
72-73 National P-val: RB236	41.52	79.56
69-70 National P-value: RB236	46.15	

Timing: (in seconds)

	Stimulus:	37	39
	Response:	13	11
	I don't know:	5	5
	Pause:	6	6
RB236	Exercise total:	61	61

The picture on the opposite page shows a place in a city, where a row of tall buildings separates two open areas which will be made into parks.

Imagine that you have been appointed to prepare a plan for landscaping the two proposed parks. Before you prepared the plan for your plantings, what PHYSICAL FACTORS OR CONDITIONS OF THE ENVIRONMENT would you want to consider? Ignore "people factors" like traffic and list three clearly physical conditions.

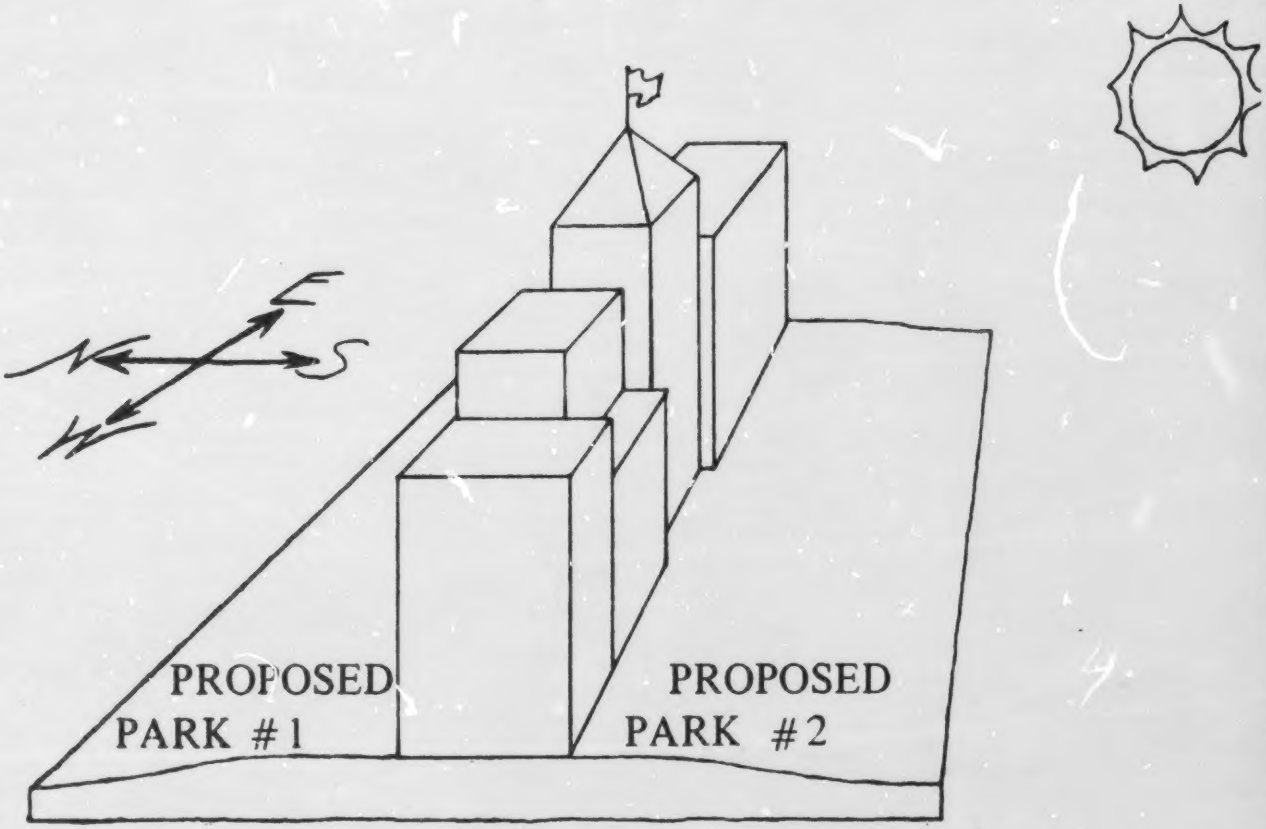
(1) ____
____

(2) ____
____

(3) ____
____

(1)			(2)			(3)		
○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○
RP257	○	○		○	○		○	○
	○	○		○	○		○	○
	○	○		○	○		○	○
	○	○		○	○		○	○
	○	○		○	○		○	○
	○	○		○	○		○	○

(Continued)


E
N
S
W
PROPOSED
PARK #1
PROPOSED
PARK #2

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 205014

72-73 Report #: RP257

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: E. Understand and apply the scientific enterprise.

Science Type: Physical science

Exercise Type: Multiple part short answer using drawing
Scoring Type: Professional
Administration Mode: Group

Age:	13	17IS	Adult
72-73 Package-Exercise:	09-12	04-13	01-21
72-73 National P-val:			
RP257-1	33.45	63.17	62.60
RP257-2	25.95	50.35	49.60
RP257-3	17.04	33.91	36.48
Timing: (in seconds)			
Stimulus:	32	30	31
Response:	89	89	*
RP257 Exercise total:	121	119	*

*Time not limited by paced tape.

Exercise 205014-2,3,4; RP 257

Suppose you are to plan for landscaping the two proposed parks pictured on the opposite page. What physical factors or conditions of the environment would you want to consider? Ignore "people factors" like traffic and list three clearly physical conditions.

000 = No response

Acceptable

100 = Soil
How good the soil was.
Good soil.
If the ground is suitable for plants.
What kind of soil is there.
The nutrient value of the soil.
Soft ground.

101 = Daily light capacity
The way the sun was facing.
Plenty of sunlight.
The positions and times the sun strikes the spots.
I would like to know if you could get enough sun on both sides.
Amount of sunlight on a given spot each day.
Plenty of sunlight.
That you have sun on one side. Shade on the other.

102 = Size of park
How much area I had to work with.
How large is the park.
Land space.
How much land I would need.
To see how wide it is.

103 = Rainfall and water supply
Rain amount that falls on each area.
Amount of rainfall.
Amount of available water.
Where to get water.

104 = Wind
Which way does the wind usually blow?
Wind direction. Use of building for wind block.
Wind factor.
Wind direction and velocity.
Sheltered from the winds.

105 = Climate
What kind of weather there is.
How hot it would be every day.
Climate.

Exercise 205014-2,3,4 (cont.)

What type of weather environment would be in the park.
Take into account the general weather of the area.
Heat near the buildings may harm plants.
Where it was.
The location.
Characteristics of plantings and maintenance.

106 = Terrain, watertable, etc.
How level the ground is.
If it rains the water won't wash away the soil.
The down grade on both sides.
Drainage.
The contour of the land.
How high it is.
See how low it is.

107 = Manmade features already present
Check for sewage or drainage outlets first from building.
The buildings must have some pipes and that would cause trouble.

108 = Pollution (as it would affect choice of types of plantings)
Any kind of waste from the buildings that would hurt the plants.
The pollution involved in the city.
How much pollution is in the area.
Clean air.

109 = Natural features already present
If there are trees or a small lake or hills.
Is there some kind of stream or lake in the two parks.

110 = Other acceptable

Unacceptable

200 = Procedure to follow; or items to put in the parks
I'd have trees planted and flowers and bushes.
Grass and lots of trees.
Swimming and recreation room.
I would make it a good parking lot.
I would want to separate or take down two buildings.
Put a little pond in it (2 feet deep).
Junk cleaned out, old tree stumps pulled out.
And then I would dig a swimming pool for the people that are going to live in the hotel rooms.
First I would measure off the land to the east and west.
There are or need to be some streets.
See the owner.
Make the building into a castle or something for the kids.
I would like to try and make the plan exactly what I'm sure they'll want.
What I want to go in the park.

201 = Location of sidewalks, streets buildings and recreational facilities in and around park
How the travel to and from the buildings would affect my parks.
Traffic.

Exercise 205014-2,3,4 (cont.)

To allow people to get to buildings.
Traffic situation.
Traffic pattern. (Also, for safety, hedges might be planted adjacent to street. One also might not plant large shrubs near a sidewalk as muggers, etc. could hide behind or in them and have easier access to their victims.)
If the buildings will be in the way.
What was in the buildings.
The type of people who will be in the buildings (older people, business, etc.)
How would it affect the people in the tall buildings.
What are the buildings used for?
Type of building - dwellings, office, etc.
Traffic
To allow people to get to the buildings.
Surroundings.
Is it a place where children would like to have a park?
Is it near a rest home?
Is it in a nice location?
Driveway. The most convenient way to the end of the garage.
Balance of the overall picture.
Take into account the compass direction.
See if the air is clean on that side.

202 = Other Unacceptable
If the buildings will have to be moved.
Reading in the park.
How much stuff.
It (park #2) has more room if you like a large one.
Don't litter.
If there was enough money.
That it is cement.
Beauty on the two sides.
Won't be near an airport.
Discuss with other people.
Is it beneficial?
The area itself.
Should the parks be close together.
Coolness and relaxation it can give - not any crowded, bustling streets close by.
Land.
How well the environment is.
Whether it was a good place to put water in.
The looks of the parks as sighted before being built.
To know if it was safe.
And big enough.
Nothing poisonous around.

399 = I don't know.

Which of the following is a scientist NOT likely to do while he is at work?

○ Think

○ Read books

● Sell tickets

○ Plan experiments

○ I don't know.

RU237

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO

8 205016-1

NAEP #: 205016

72-73 Report #: RU237
69-70 Report #: U675

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-04
69-70 Package-Exercise: 01-12

72-73 National P-val:
RU237 70.34
69-70 National P-value:
RU237 75.08

Timing: (in seconds)
Stimulus: 10
Response: 39
I don't know: 5
Pause: 6
RU237 Exercise total: 60

Scientists would have most trouble testing which of these?

○ I have a fever.
○ I weigh 101 pounds.
○ I am 62 inches tall.
○ I can lift a 20-pound box.
● My dog is better than your dog.

○ I don't know.

RU238

405
375

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

Scientists would have the most trouble testing which of the following?

○ I have a fever.

○ I am 62 inches tall.

○ I weigh 101 pounds.

○ I can lift a 20-pound box.

● My dog is better than your dog.

○ I don't know.

RU238

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 205018

72-73 Report #: RU238
69-70 Report #: R157, R242

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	04-12	02-24
69-70 Package-Exercise:	06-03	02-01
72-73 National P-val: RU238	40.50	74.53
69-70 National P-value: RU238	39.38	72.49
Timing: (in seconds)		
Stimulus:	16	17
Response:	33	18
I don't know:	5	5
Pause:	6	6
RU238 Exercise total:	60	46

When a scientist takes many measurements during an experiment and studies the results carefully, what is he probably doing?

○ Changing a theory into a law

○ Changing a law into a theory

○ Making work for a computer to prevent its being idle

○ Trying to correct a mistake he has made in arithmetic

● Seeking for relationships among the measurements he has obtained

○ I don't know.

408

RU239

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 205021

72-73 Report #: RU239
69-70 Report #: U769

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

72-73 Subobj: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 03-02
69-70 Package-Exercise: 03-09

72-73 National P-val:
RU239 62.08
69-70 National P-value:
RU239 66.59

Timing: (in seconds)
Stimulus: 26
Response: 9
I don't know: 5
Pause: 6
RU239 Exercise total: 46

In science one is LEAST likely to do which of the following things with an apple?

○ Weigh it
○ Measure its size
○ Describe its color
● Write a poem about it
○ Find how many seeds it has

○ i don't know.

RU240

410

380 STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 205027

72-73 Report #: RU240
69-70 Report #: R159

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
72-73 Subobj: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	01-17	01-15
69-70 Package-Exercise:	05-12	
72-73 National P-val: RU240	18.74	65.23
69-70 National P-value: RU240	22.98	

Timing: (in seconds)

		9	13
	Stimulus:	14	15
	Response:	35	35
	I don't know:	5	5
	Pause:	6	6
RU240	Exercise total:	60	61

A. Do you find science topics interesting?

● Often

○ Sometimes

○ Never

B. If so, what kind of topics?

____

____

____

____

____

RU258

412

382

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

8-301009-2

NAEP #: 301009

72-73 Report #: RU268
69-70 Report #: U780

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: A. Appreciate facts and simple concepts, laws (principles), and conceptual schemes.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus professional
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-29
69-70 Package-Exercise:	04-17
72-73 National P-val:	
RU268A	19.85
RU268B	72.27
69-70 National P-value:	
RU268A	24.17
RU268B	***

Timing: (in seconds)

	Stimulus:	8
	Response:	6
RU268A	Part total:	14
	Stimulus:	10
	Response:	90
RU268B	Part total:	100
RU268	Exercise total:	114

***Acceptable/Unacceptable data is not available at this time.

Exercise 301009-2; RU 268

A. Do you find science topics interesting?

B. If so, what kind of topics?

00 = no response

Acceptable

10 = Astronomy
When they're to do with the stars and the moon.
About space, planets, ecology or air.
The solar system, stars, environment.
About the rotation of planets.

11 = Space exploration
About what they have learned about in space and under the sea.

12 = Geology; rocks; earth science; oceanography (except life forms); weather
When studying about rock, living things, how they get their food.
Earth science (some of it), prehistoric times (dinosaurs, etc.).

13 = Biology; cells; microorganisms; plants; animals
Topics about reptiles.
Study frogs and other kinds of animals.
Life science, earth science, science on the sea (goes with the first one).
Studying animals and doing experiments with chemicals.
Biology, zoology, sometimes earth science, oceanography. Maybe chemistry.

14 = Human body; medicine; disease
Topics on the living body and parts, ocean life, animal life.
Mostly things that have to do with the human body and life itself. Things that have to do with human reproduction and the course of life.

15 = Evolution; genetics; archeology; fossils
Prehistoric topics, fossils, rocks, atoms.
Topics on prehistoric finds like fossils and bones, and things in ice. Also things having to do with animals of all kinds.
Dinosaurs.

16 = Chemistry; physics; electricity; mechanics
Machines, or simple machines.
Chemicals and animals.
Electrons, electricity, sound, molecules, light.

Exercise 301009-2 (cont.)

17 = Science fiction; new discoveries; things in the future
Interesting topics such as science fiction stories or shows.
Topics were you can find interesting information and more modern updated topics which scientists are working on now.

18 = About scientists; historical scientific events
no examples

19 = Other acceptable. Environment; pollution
Things that are going on in the world today; such as, overpopulation, pollution and so on.
Metric system. Weighing stuff.

Unacceptable

20 = Unacceptable
Well something of science of the world.
About the way we live.
Experiments.

39 = I don't know

A. Outside of school, how often do you read stories or articles about science or scientists: often, sometimes, or never?

● Often (Go to B)

○ Sometimes (Go to B)

○ Never (End the exercise)

B. What have you read most recently?

RU341

416

386

S-301010-2

NAEP #: 301010

72-73 Report #: RU241
69-70 Report #: U774

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: A. Appreciate facts and simple concepts, laws (principles), and conceptual schemes.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus professional
Administration Mode: Individual

Age:	13
72-73 Package-Exercise:	12-07
69-70 Package-Exercise:	13-09
72-73 National P-val:	
RU241A	11.40
RU241B	42.14
69-70 National P-value:	
RU241A	19.04
RU241B	***

Timing: No paced tape was used in this individually administered exercise.

***Acceptable/Unacceptable data is not available at this time.

Exercise 301010-2; RU 241

A. Outside of school, how often do you read stories or articles about science or scientists; often, sometimes, or never?

B. What have you read most recently?

00 = no response

Acceptable

10 = Space exploration and astronomy
Popular Science - moon landing.
About solar system - sun and stars.

11 = Geology
Articles on rocks and minerals.

12 = Weather
About hurricanes.
About how you make rain, clouds and stuff in jars.

13 = Animals and plant life.
Article on insects.
Looked up the hermit crab in the encyclopedia.

14 = Medicine and drugs.
Heart transplant.
About drugs people take.

15 = Weapons, cars, machines, mechanical inventions.
About building a mechanical nose.
The jet and how it works.
New vehicles - Honda 750.

16 = Chemistry.
... and chemistry in the encyclopedia.

17 = Science Fiction.

18 = About scientists and their lives.

19 = Other acceptable.

- -

Unacceptable

20 = Names a general science magazine or general book (only).

21 = Other unacceptable.

39 = I don't know.

A. Do you read science articles in magazines?

● Often

○ Sometimes

○ Never

B. If so, what article have you read most recently?

____

____

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RU242

STOP DO NOT CONTINUE
UNTIL TOLD TO DO SO.

A. How often do you read science articles in magazines: often, sometimes, or never?

○ Often (Go to B)
○ Sometimes (Go to B)
○ Never (End the exercise)

B. What article have you read most recently?

RU342

8-301011-3s④

NAEP #: 301011

72-73 Report #: RU242
69-70 Report #: U869

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: A. Appreciate facts and simple concepts, laws (principles), and conceptual schemes.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus professional
Administration Mode: Individual for adults/Group at other ages

Age:	17IS	Adult
72-73 Package-Exercise:	01-07	08-08
69-70 Package-Exercise:	05-17	
72-73 National P-val:		
RU242A	8.03	18.06
RU242B	46.21	51.17
69-70 National P-value:		
RU242A	9.20	
RU242B	***	

Timing: (in seconds)

	Stimulus:	7
	Response:	6
RU242A	Part total:	13
	Stimulus:	7
	Response:	98
RU242B	Part total:	105
RU242	Exercise total:	118

***Acceptable/Unacceptable data is not available at this time.

Exercise 301011-3,4; RU 242

A. How often do you read science articles in magazines?

B. What article have you read most recently?

00 = no response

Acceptable

10 = Astronomy; space exploration

11 = Environment; ecology; pollution; overpopulation

12 = Geology; rocks; earth science; oceanography (ex. life forms); weather

13 = Biology; cells; microorganisms; plants; animals

14 = Human body; medicine; disease; reproduction (human); nutrition

15 = Evolution; genetics; archeology; fossils

16 = Chemistry; physics; electricity; mechanics

17 = Science fiction; new discoveries; things in the future

18 = About scientists; historical scientific events

19 = Other acceptable

- -

Unacceptable

20 = Sociology; psychology (Considered acceptable by some consultants)

21 = Economics; other math topics

22 = Technical manuals (If article described is acceptable, code under an Acc. category)

23 = Gives source but not description of article

24 = (not used)

25 = Other unacceptable

39 = I don't know.

A. Do you agree with the following statement?

> The methods of science are fine for scientists, but there is little in these methods to help people with everyday problems.

○ I agree.

● I do not agree.

○ I have no opinion.

B. Give a reason for your answer.

RU259

423

393

STOP

DO NOT CONTINUE UNTIL TOLD TO DO SO

[illegible] 3. [illegible]

NAEP #: 302002

72-73 Report #: RU269

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: B. Appreciate inquiry skills.

Science Type: Unclassified

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus semi-professional
Administration Mode: Group

Age:		13	17IS	Adult
72-73 Package-Exercise:		02-26	02-05	06-31
72-73 National P-val:				
RU269A		47.92	63.94	70.56
RU269B		4.58	8.88	15.88
Timing: (in seconds)				
	Stimulus:	17	16	18
	Response:	17	16	*
RU269A	Part total:	34	32	*
	Stimulus:	2	3	2
	Response:	53	54	*
RU269B	Part total:	55	57	*
RU269	Exercise total:	89	89	*

*Time not limited by paced tape.

Exercise 302002-2,3,4; RU 269

A. Do you agree with the following statement?

The methods of science are fine for scientists, but there is little in these methods to help people with everyday problems.

B. Give a reason for your answer.

00 = no response

Acceptable

10 = Problem solving skills that scientists use can be used in everyday life
  When you have a problem, you can solve it the way scientists do.
  The methods of scientists relate to the problems of today from a scientific point of view. They deal with things as they are, not as they appear to be!
  In solving everyday problems like fixing a TV or a lamp, it is good to use scientific methods; hypothesize what is wrong and set up an ordered plan of action.
  By eliminating extra data and evaluating only the pertinent information, as scientists do, many "everyday" problems would become more clearly defined & thus more easily solved.
  Scientific methods are based on (1) definition of the problem (2) listing of possible alternatives for solution (3) step by step progressions to solutions - this approach is BASIC to all problem solving, even everyday problems.

11 = Measuring skills that scientists use can be used in everyday life
  There are things in science that help the everyday person. For instance how many ounces are in a pound.

12 = Communication skills that scientists use can be used in everyday life
  no examples

13 = Logical thinking that scientists use can be used in everyday life
  Science works basically on logic which is helpful in solving "everyday" problems.
  Scientific methods are designed to make you think logically. When someone has evidence or establishes facts about something and infers conclusions from them.
  The process of inductive logic can be used to solve everyday problems as well as complex problems.
  The methods used in science follow a logical sequence. To solve everyday problems some semblence to logical order is necessary.

A logical & objective approach can be of obvious use in solving any type of problem.

Logical reasoning and a programmed approach are applicable to all kinds of problems, not just scientific ones.

14 = Attitudes (honesty, etc.) that scientists have can be applied to everyday life

The methods of science teach patience. This can be applied to life.

Science tries to do away with unproven assumptions & prejudices in solving problems.

Scientists are careful, methodical, & inquisitive. All these qualities and traits should be developed by everyone.

15 = Safety methods that scientists use can be used in everyday life

Because it shows and tells what to do in case of fire & things like that. It could tell you how to be safe in household stuff.

In safety - understanding grounding systems, kindling points of various materials (parafin).

Certain chemicals in cleaning solutions do not mix well - knowledge of this may prevent serious accidents.

16 = Other acceptable. (Most responses tell how an ordinary person can use scientific knowledge, as opposed to scientific methods, in his everyday life.)

Because when you are lifting a big box you could use a wedge.

Because it could help you when you're planting a garden because you know how much water to put in stuff like that.

Scientists use methods in farming and a farmer uses these better methods.

It gives the measure of time and a lot of things that we use today in everyday life - example: machines.

Take the example of planting. There are scientific problems and methods to know in order to follow procedure.

Methods of science help us from day to day in building new things.

Example: Knowing effects of energy in different forms can help in cutting household costs of heating, cooking, lighting, etc.

When gardening you can use science. When fixing just about anything science comes in handy.

The average person predicts roughly the weather for the next day by watching for signs in the atmosphere.

Everyday problems are solved scientifically without us really realizing it; such as, when we mix vinegar and oil together and they settle from one another.

Unacceptable

20 = Unacceptable
(Not categorized, but generally fall into four basic groups)

**Any reason for agreeing with the statement

What scientists learn is a lot more complicated for everyday people.
People don't refer back to school very often.
They use big words that ordinary people can't understand so it doesn't help us much.
Some of the methods may be too complicated for average people who may not be as bright in this field.
I agree because the equipment and the knowledge used is superior to what you find in an everyday home or situation.

**Tells how scientists use their methods to help people in their everyday lives

Take for instance oven cleaners; they are constantly trying to improve them to help Mrs. Housewife.
Science has something for everyone regardless of their ideas.
Because when people are dying for some reason and scientists have the methods and cure, this is well for the people and it does help them.
There are lots of things that scientists could find to help people today. Finding a cure for the disease and what is causing it.

**Restatement of part A

Most scientific methods today do help people with everyday problems.
I do not agree because science benefits society as a whole, not just scientists.
Some things of science can be very useful later in life.
The methods of science can be used in everyday problems.

**Other

Many things are related to some scientific things we do everyday.
Because there are lots of things that we need to know about science.
If you know some things the scientists know you probably could clean and protect you and your possessions.
Because I use science and I enjoy it.
Science is always useful in learning about our world, facts of life, solving problems, and having general knowledge of different aspects of life.
I do not agree because scientists go by these things scientifically to find an answer and that answer is usually right.

39 = I don't know

The following statements may, or may not, indicate how you feel about the study of science. Indicate whether you agree, disagree, or neither agree nor disagree with each statement.

A. I would like to become a scientist.

- ● Agree
- ○ Disagree
- ○ Neither agree nor disagree

B. I enjoy learning about new developments which result from science, whether or not I want to become a scientist.

- ● Agree
- ○ Disagree
- ○ Neither agree nor disagree

RU270

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 302011

72-73 Report #: RU270

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: B. Appreciate inquiry skills.

Science Type: Unclassified

Exercise Type: Multiple part multiple choice
Scoring Type: Machine
Administration Mode: Group

		13	17IS
Age:			
72-73 Package-Exercise:		08-09	11-26
72-73 National P-val:			
RU270A		13.14	9.07
RU270B		70.60	70.83
Timing: (in seconds)			
RU270	Introduction:	13	13
	Stimulus:	9	8
	Response:	11	14
RU270A	Part total:	20	22
	Stimulus:	14	13
	Response:	13	14
RU270B	Part total:	27	27
RU270	Exercise total:	60	62

How often have you watched bees, squirrels, birds, or other animals to see what they eat or where they live: often, sometimes, or never?

● Often

○ Sometimes

○ Never

430

R8243

NAEP #: 302014

72-73 Report #: RB243
69-70 Report #: U686

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: B. Appreciate inquiry skills.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Individual

Age:	9
72-73 Package-Exercise:	10-01
69-70 Package-Exercise:	11-13
72-73 National P-val:	
RB243	32.79
69-70 National P-value:	
RB243	43.76

Timing: No paced tape was used in this individually administered exercise.

Planting seeds and finding out how fast they grow could be a science experiment.

● I believe this statement.

○ I don't believe this statement.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 302015

72-73 Report #: RB244
69-70 Report #: U771

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: B. Appreciate inquiry skills.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	02-20
69-70 Package-Exercise:	09-15
72-73 National P-val:	
RB244	93.46
69-70 National P-value:	
RB244	93.39

Timing: (in seconds)
Stimulus: 10
Response: 10
I don't know: 4
Pause: 6
RB244 Exercise total: 30

The next set of exercises will be about your opinions. These need to be answered in a new way. You will put a check mark (✓) in one of the spaces between two opposite ways people might feel about something. For example, an exercise may say:

Cooked oatmeal is

crispy ______:______:______:______:______:______:______ mushy

harmful ______:______:______:______:______:______:______ beneficial

horrible ______:______:______:______:______:______:______ delicious

Cooked oatmeal is a topic most people have some opinions about. You would look at each pair of opposite words and decide how far between them you want to put your check mark. Suppose you have just marked the first part this way:

crispy ______:______:______:______:______:______:___✓___ mushy

This would tell us that you think cooked oatmeal is as mushy as you can think of anything being. It is "all the way mushy."

Suppose you marked the second pair of opposites this way:

harmful ______:______:______:______:______:___✓___:______ beneficial

This would tell us that you believe cooked oatmeal is very good for you but not quite as nutritious as a few things you can think of.

RU271

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

(Continued)

Suppose you marked the last pair of opposites this way:

horrible ______ : ______ : ______ : ___✓___ : ______ : ______ : ______ delicious

This would mean you are right in the middle. You do not love oatmeal and you do not hate it. You feel "so-so" about it.

The next set of exercises is like the example you just did. For each topic on this and the following page there are two pairs of opposite words. For each pair of words, put your check mark (✓) in the space where you stand in your feeling about the topic. There is no "right" answer. You are simply to show YOUR personal opinions on the topics:

Technology is

A. harmful ______ : ______ : ______ : ______ : ______ : ______ : ______ beneficial

B. boring ______ : ______ : ______ : ______ : ______ : ______ : ______ interesting

Science is

C. harmful ______ : ______ : ______ : ______ : ______ : ______ : ______ beneficial

D. boring ______ : ______ : ______ : ______ : ______ : ______ : ______ interesting

A	B	C	D
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○

435

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

(Continued)

Studying science in school is

E. hard _____ : _____ : _____ : _____ : _____ : _____ : _____ easy

F. boring _____ : _____ : _____ : _____ : _____ : _____ : _____ interesting

Scientific explanations of the world are

G. harmful _____ : _____ : _____ : _____ : _____ : _____ : _____ beneficial

H. boring _____ : _____ : _____ : _____ : _____ : _____ : _____ interesting

For me to become a scientist would be

I. harmful _____ : _____ : _____ : _____ : _____ : _____ : _____ beneficial

J. boring _____ : _____ : _____ : _____ : _____ : _____ : _____ interesting

RU271

E	F	G	H	I	J
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 303009

72-73 Report #: RU271

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: C. Appreciate the scientific enterprise.

Science Type: Unclassified

Exercise Type: Multiple part multiple choice
Scoring Type: Semi-professional
Administration Mode: Group

Age:	13	17IS	Adult
72-73 Package-Exercise:	06-24	06-13	02-31
72-73 National P-val: RU271	***	***	***

Timing: (in seconds)

RU271	Introduction:	124	117	119
	Stimulus:	7	6	6
	Response:	9	11	*
RU271A	Part total:	16	17	*
	Stimulus:	7	5	6
	Response:	8	10	*
RU271B	Part total:	15	15	*
	Stimulus:	7	6	6
	Response:	8	10	*
RU271C	Part total:	15	16	*
	Stimulus:	7	5	5
	Response:	8	10	*
	Turn page:	(6)	(6)	(6)
RU271D	Part total:	15**	15**	*
	Stimulus:	6	5	5
	Response:	8	10	*
RU271E	Part total:	14	15	*
	Stimulus:	8	7	7
	Response:	8	10	*
RU271F	Part total:	16	17	*
	Stimulus:	8	7	7
	Response:	9	9	*
RU271G	Part total:	17	16	*
	Stimulus:	9	7	7
	Response:	8	10	*
RU271H	Part total:	17	17	*
	Stimulus:	10	7	7
	Response:	8	10	*
RU271I	Part total:	18	17	*
	Stimulus:	10	7	6
	Response:	9	10	*
RU271J	Part total:	19	17	*
RU271	Exercise total:	286	279	*

*Time not limited by paced tape.

**Time to turn page is not included in total times.

***Acceptable/Unacceptable data is not available at this time.

Exercise 303009-2,3,4; RU 271

Instructions to Respondent:

The next set of exercises will be about your opinions. These need to be answered in a new way. You will put a check mark (✓) in one of the spaces between two opposite ways people might feel about something.

The next set of exercises is like the example you just did. For each topic on this and the following page there are two pairs of opposite words. For each pair of words, put your check mark (✓) in the space where you stand in your feeling about the topic. There is no "right" answer. You are simply to show YOUR personal opinions on the topics.

Instructions to Scorers:

Parts A-J use as a guide:

A. harmful 1: 2: 3: 4: 5: 6: 7 beneficial

Grid in the number of the space checked. If one word is circled, grid the adjacent end number. If two checks, average the two (round off toward center).

Grid 0 if No Response

Note: Acceptable/unacceptable designations have not been made.

A coal-burning electric power plant is proposed in your area. The power plant will reduce the cost of electricity as well as prevent future power failures. It will also discharge heat into the environment and cause some air pollution. Which one of the following best describes YOUR reaction to the proposed construction of this power plant?

- ○ Build it. I can save money.
- ○ Build it. It will be good for my community.
- ○ Build it. I'll have all the electricity I need.
- ○ Don't build it since it will pollute the water and the air.
- ● Don't build it without first determining the effect on the environment.

- ○ I don't have any reaction.

R6272

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 303033

72-73 Report #: RB272

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: C. Appreciate the scientific enterprise.

Science Type: Biological science

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	02-09	06-02
72-73 National P-val: RB272	77.86	79.12
Timing: (in seconds)		
Stimulus:	42	46
Response:	11	*
I don't know:	1	*
Pause:	6	*
RB272 Exercise total:	60	*

*Time not limited by paced tape.

Indicate whether you approve or disapprove of pure scientific research in each area described on this and the following two pages.

A. Modification of inherited traits in humans

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

B. Space exploration

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

C. Pesticides and herbicides

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

D. Atomic energy

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

(Continued)

E. Production of life in the laboratory

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

F. Air and water pollution

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

G. Extraction of food from plants growing in the sea

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

H. Heart transplants

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

(Continued)

I. Population control

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

J. Origins of the universe

● Yes, I approve of such research.
○ No, I do not approve of such research.

○ I don't know.

K. If you wish, offer a comment on any one of the above.

____

____

____

____

____

RU273

T K

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 303042

72-73 Report #: RU273

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: C. Appreciate the scientific enterprise.

Science Type: Unclassified

Exercise Type: Multiple part multiple choice plus short answer
Scoring Type: Machine plus professional
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	08-05	03-27
72-73 National P-val:		
RU273A	72.23	62.69
RU273B	70.19	76.14
RU273C	74.44	80.40
RU273D	71.69	81.39
RU273E	51.84	47.96
RU273F	94.95	96.11
RU273G	82.31	85.14
RU273H	84.39	85.07
RU273I	77.33	85.36
RU273J	65.69	70.78
RU273K	22.75	21.49

Timing: (in seconds)

RU273	Introduction:	9	10
	Stimulus:	10	13
	Response:	6	*
	I don't know:	4	*
	Pause:	5	*
RU273A	Part total:	25	*
	Stimulus:	8	3
	Response:	5	*
	I don't know:	1	*
	Pause:	3	*
RU273B	Part total:	17	*
	Stimulus:	9	3
	Response:	6	*
	I don't know:	1	*
	Pause:	4	*
RU273C	Part total:	20	*
	Stimulus:	9	2
	Response:	5	*

	I don't know:	1	*
	Pause:	4	*
	Turn page:	(5)	(6)
RU273D	Part total:	19**	*
	Stimulus:	9	2
	Response:	5	*
	I don't know:	1	*
	Pause:	3	*
RU273E	Part total:	18	*
	Stimulus:	9	2
	Response:	6	*
	I don't know:	1	*
	Pause:	3	*
RU273F	Part total:	19	*
	Stimulus:	11	4
	Response:	6	*
	I don't know:	1	*
	Pause:	3	*
RU273G	Part total:	21	*
	Stimulus:	9	2
	Response:	6	*
	I don't know:	1	*
	Pause:	4	*
	Turn page:	(5)	(6)
RU273H	Part total:	20**	*
	Stimulus:	8	1
	Response:	6	*
	I don't know:	1	*
	Pause:	3	*
RU273I	Part total:	18	*
	Stimulus:	9	2
	Response:	5	*
	I don't know:	1	*
	Pause:	4	*
RU273J	Part total:	19	*
	Stimulus:	5	5
	Response:	60	*
RU273K	Part total:	65	*
RU273	Exercise total:	270	*

*Time not limited by paced tape.

**Time to turn page is not included in total times.

Exercise 303042-3,4; RU 273

A-J. Indicate whether you approve or disapprove of pure scientific research in each area described on this and the following two pages.

K. If you wish, offer a comment on any one of the above.

00 = no response

Acceptable

10 = Positive comment on any one part

11 = Conditional comment on any one part

12 = General positive statement

Unacceptable

20 = Negative comment on any one part

21 = Other comments on any one part

22 = General negative or neutral statement

39 = I don't know

Note to Scorers: If respondent makes two comments on two subjects, score the first or the clearest.

T. Note: T is an additional scoring category based on responses to part K. T requires two digits.

If no comment on K (K = 00), T = 00.
If comment on K does not apply to any one part (K = 12, 22 or 39), T = 00.
If comment on K is on any one part (K = 10, 11, 20 or 21), T = 1 _n_ where _n_ is

0 if comment on Part A
1 if comment on Part B
2 if comment on Part C
3 if comment on Part D
4 if comment on Part E
5 if comment on Part F
6 if comment on Part G
7 if comment on Part H
8 if comment on Part I
9 if comment on Part J

Exercise 303042-3,4 (cont.)

Note: T = 00 if and only if K = 00, 12, 22 or 39.
T = 10-19 if and only if K = 10, 11, 20 or 21.

The following examples are scored using both T and K.

T = 00 General Comments

K = 12 General positive or conditional statement

All of these are important to man now, and most will become more important in the next 5 to 10 years to sustain life.

I approve of any pure scientific research which any scientist may do as long as the fruits of this research are controlled by the individual members of a society.

Scientific research is so needed in many fields. I would like more done in the medical field.

I believe in all forms of research as long as it is for the betterment of mankind and for our United States.

K = 22 General negative statement; other statements

On some of these projects I disapprove; more money could be going for education and our elderly. (disapproved on B, D, F, G, & J)

Hard questions to answer yes or no.

Most of the "No, I don't approve" answers are answered that way because I feel they have no value whatsoever.

Some are too broad of a topic and I am not sure what you are talking about (pesticides and herbicides).

In these questions you should not just have the two extreme answers but there should also be an answer which is in the middle or moderate form.

T = 10 Part A Modification of inherited traits in humans (cont.)

K = 20 Negative comments

I do not believe in altering human life embryo, etc.

The science of geneology is one that I approve of but inherited traits of the human race ought not be altered.

Human life is something not to be taken for granted.

I do not approve of any attempt to create or alter human beings through science.

K = 21 Other comments
(no samples)

T = 11 Part B Space exploration

K = 10 Positive comments
(no samples)

Exercise 303042-3,4 (cont.)

K = 11 Conditional comments

I approve of space research but feel the government is spending too much money on it--let's get with cancer and other disease research instead.

I agree and disagree.

There should be monetary limits on B and J.

Space exploration is O.K. but too costly in comparison with its merits.

K = 20 Negative comments

Stay out of space and take care of the problems here on earth.

Research in space exploration should be curtailed because of the financial investment and pressing need for such resources elsewhere. I would relate the same comment to atomic energy research. In brief, all research should enhance the life of human beings but science and technology has forgotten the masses except for the financial resourses they offer.

Space exploration may be good but I can't see using money for this when people are in need of food in America. I can't see how it can help the world.

K = 21 Other comments

(no samples)

T = 12 Part C Pesticides and herbicides

K = 10 Positive comments

We need more ways of growing foods so I approve of C.

More research should be made to find pesticides that will not pollute the land, air, or water.

K = 11 Conditional comments

Pesticides, herbicides only as an aid to ranchers & farmers and not as warfare usage.

K = 20 Negative comments

Disapprove of pesticides and herbicides: That is, the production of such.

K = 21 Other comments

(no samples)

T = 13 Part D Atomic energy

K = 10 Positive comments

(no samples)

K = 11 Conditional comments

Yes, but I think atomic research should not be used for any kind of weaponry.

Exercise 303042-3,4 (cont.)

Atomic energy can or cannot be used for the progress or well being of mankind. Not as strongly yes on this as on others.

I approve of the research of atomic energy for peaceful purposes only.

K = 20 Negative comments

Atomic energy in my opinion is asking for trouble, due to its strength.

K = 21 Other comments

(no samples)

T = 14 Part E Production of life in the laboratory

K = 10 Positive comments

(no samples)

K = 11 Conditional comments

My 'IDK' answer to part E simply says--I'm not sure--depending on for what purpose.

Life in the lab should be restricted to plants and small animals with the end result to end disease and help life, not to improve a breed of animals or humans.

I do not feel that human life should be produced under laboratory conditions, other life forms such as plant life forms are acceptable to me.

I do not approve of reproducing human life in the laboratory.

I approve of production of life in the lab only to give greater knowledge of how the human cells perform, not to create life.

K = 20 Negative comments

I do not feel we should have laboratory people because some day it would be all highly one strand of people such as Hitler.

As long as humans can produce there is not a need to fool around in a laboratory to produce life.

I am not convinced that we should interfere with "creation of life".

I don't think that life should be produced on a laboratory level--we have become a machine oriented scheduled society, numbered enough--let us keep parents and children.

I think creation and control of human life should be left to God.

Only God can create.

I believe that only God should give life and only God should take it away, but I believe we should try to make it better.

Exercise 303042-3,4 (cont.)

K = 21 Other comments

E would be interesting but the possible results could be regretful.

I believe in producing life in laboratories for those otherwise unable to have children.

T = 15 Part F Air and water pollution

K = 10 Positive comments

Research into air and water pollution is a must if we are to continue to exist and not create a social tinderbox in our enivronment.

I believe it's a good thing to try and improve the environment and make the earth a good place to live.

Something has got to be done soon with air and water pollution.

K = 11 Conditional comments

(no samples)

K = 20 Negative comments

(no samples)

K = 21 Other comments

(no samples)

T = 16 Part G Extraction of food from plants growing in the sea

K = 10 Positive comments

Plant life of the sea will probably be a main source for food in the future.

K = 11 Conditional comments

(no samples)

K = 20 Negative comments

(no samples)

K = 21 Other comments

(no samples)

T = 17 Part H Heart Transplants

K = 10 Positive comments

Should study more on heart transplants.

To find out more about hearts.

K = 11 Conditional comments

(no samples)

Exercise 303042-3,4 (cont.)

K = 20 Negative comments
(no samples)

K = 21 Other comments
Depends on patient's over all health, age, etc.

T = 18 Part I Population control

K = 10 Positive comments
I think population control is most important and should be studied until we find an answer to the overcrowding--which breeds disease and poverty.
Population control - I feel if nothing is done, soon there will be too many people and not enough food to feed them.
Population control - 2 children per family.
"Right on" with population control.

K = 11 Conditional comments
Population control but not abortion, if this is a means of control.
I approve of population control in the sense of finding methods of contraception so individuals can decide when they do or don't want to add to the population.
(approve) That is so long as people are still free to choose for themselves.

K = 20 Negative comments
I do not believe in population control. Everyone should be able to plan their own families.

K = 21 Other comments
I don't go for abortions.
Population control--Offering the means of control but leaving it up to the individual to decide how much he enjoys children and how many he can enjoy and raise.
Population control--I believe that this particular subject should be left up to the individual.

T = 19 Part J Origins of the universe

K = 10 Positive comments
(no samples)

K = 11 Conditional comments
Yes to No. J. But only as second to making Earth better first.

Exercise 303042-3,4 (cont.)

K = 20 Negative comments

I do not believe that finding about the origin of the world will help us in any way.

Origin of the universe has already been answered--Genesis.

I believe only God can answer the origin of the universe. Humans will never find out through any other means.

K = 21 Other comments

Only Jesus Christ holds the key to paradise, we cannot discover the truth without Him!

On this and the following page is a series of statements about the nature of science. For each statement, indicate whether you agree, whether you disagree, or whether you neither agree nor disagree with the statement.

A. Scientists believe that the universe will be completely understood in a few years.

○ Agree
● Disagree
○ Neither agree nor disagree

B. Science is a self-correcting enterprise.

● Agree
○ Disagree
○ Neither agree nor disagree

C. Scientific conclusions are statements that something is highly probable.

● Agree
○ Disagree
○ Neither agree nor disagree

RU274

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

(Continued)

D. Laws in science are statements which are not subject to change.

○ Agree

● Disagree

○ Neither agree nor disagree

RU274

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 303065

72-73 Report #: RU274

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: C. Appreciate the scientific enterprise.

Science Type: Unclassified

Exercise Type: Multiple part multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	10-03	01-05
72-73 National P-val:		
RU274A	78.87	78.94
RU274B	42.67	41.80
RU274C	73.41	76.53
RU274D	63.64	63.82

Timing: (in seconds)			
RU274	Introduction:	15	16
	Stimulus:	11	11
	Response:	6	*
RU274A	Part total:	17	*
	Stimulus:	9	4
	Response:	6	*
RU274B	Part total:	15	*
	Stimulus:	10	6
	Response:	6	*
	Turn page:	(6)	(5)
RU274C	Part total:	16**	*
	Stimulus:	9	4
	Response:	6	*
RU274D	Part total:	15	*
RU274	Exercise total:	78	*

*Time not limited by paced tape.

**Time to turn page is not included in total times.

On this and the following two pages are statements about theories and their role in science. Read each statement and indicate whether you agree or disagree with the statement.

A. Theories are created in the minds of men.

● Agree
○ Disagree

○ I don't know.

B. Theories in science never go beyond the observed facts on which they are based.

○ Agree
● Disagree

○ I don't know.

C. The usefulness of a theory is in its application in explaining natural events.

● Agree
○ Disagree

○ I don't know.

RU276

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

(Continued)

D. Theories are neither true nor false but are judged only in terms of whether they are useful in explaining natural events.

● Agree
○ Disagree

○ I don't know.

E. Theories exist in the forms of words, mechanical models, and mathematical models.

○ Agree
● Disagree

○ I don't know.

F. If research results demonstrate that a theory is inadequate, the theory should be thrown out immediately.

● Agree
○ Disagree

○ I don't know.

RU376

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

27. (Continued)

G. The more complicated the theory, the better satisfied the scientist will be with it.

○ Agree

● Disagree

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 303070

72-73 Report #: RU276

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: C. Appreciate the scientific enterprise.

Science Type: Unclassified

Exercise Type: Multiple part multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17IS	Adult
72-73 Package-Exercise:	05-27	05-25
72-73 National P-val:		
RU276A	86.11	86.20
RU276B	76.98	70.65
RU276C	74.99	74.58
RU276D	61.49	62.42
RU276E	74.81	72.83
RU276F	69.76	69.09
RU276G	71.99	75.02

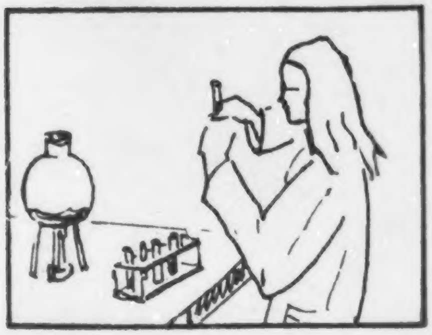
Timing: (in seconds)

RU276	Introduction:	12	13
	Stimulus:	7	9
	Response:	6	*
	I don't know:	4	*
	Pause:	4	*
RU276A	Part total:	21	*
	Stimulus:	9	6
	Response:	6	*
	I don't know:	1	*
	Pause:	3	*
RU276B	Part total:	19	*
	Stimulus:	9	7
	Response:	6	*
	I don't know:	1	*
	Pause:	4	*
	Turn page:	(6)	(6)
RU276C	Part total:	20**	*
	Stimulus:	10	7
	Response:	6	*
	I don't know:	1	*
	Pause:	4	*
RU276D	Part total:	21	*
	Stimulus:	10	7
	Response:	5	*
	I don't know:	1	*
	Pause:	4	*
RU276E	Part total:	20	*
	Stimulus:	11	8
	Response:	6	*
	I don't know:	1	*
	Pause:	4	*
	Turn page:	(6)	(6)
RU276F	Part total:	22**	*
	Stimulus:	9	5
	Response:	6	*
	I don't know:	1	*
	Pause:	6	*
RU276G	Part total:	22	*
RU276	Exercise total:	157	*

*Time not limited by paced tape.

**Time to turn page is not included in total times.

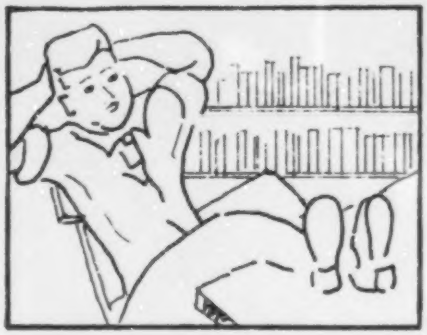
Could the person or persons in each picture on this and the following page be doing scientific work?



● Yes

○ No

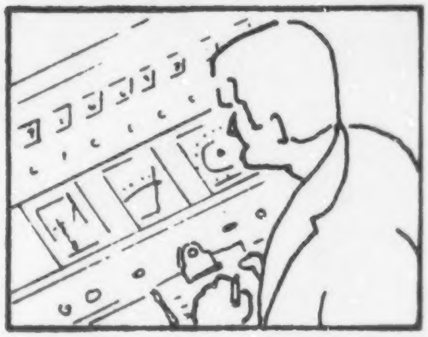
○ I don't know.



● Yes

○ No

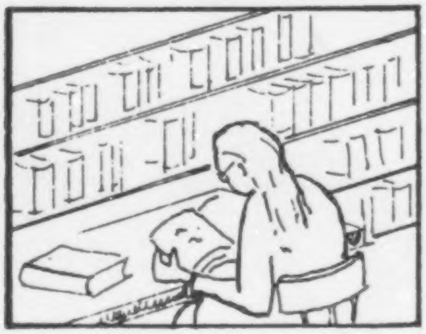
○ I don't know.



● Yes

○ No

○ I don't know.



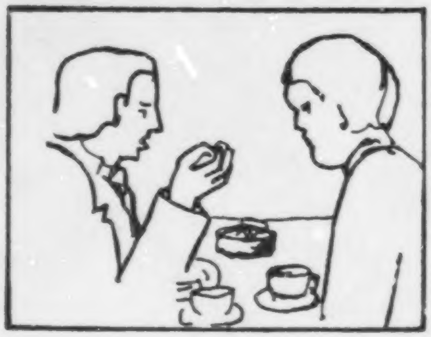
● Yes

○ No

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

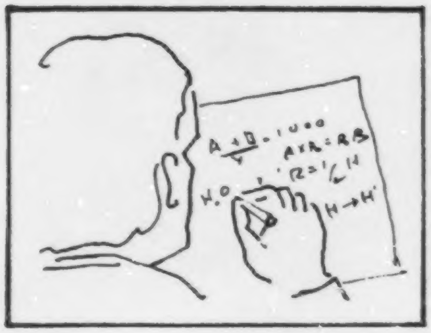
Continued)



● Yes

○ No

○ I don't know.



● Yes

○ No

○ I don't know.

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 303072

72-73 Report #: RU275

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: C. Appreciate the scientific enterprise.

Science Type: Unclassified

Exercise Type: Multiple part multiple choice using drawings
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	04-03	08-27
72-73 National P-val:		
RU275-1	96.90	98.06
RU275-2	3.90	24.66
RU275-3	86.20	93.39
RU275-4	63.13	83.98
RU275-5	17.67	35.83
RU275-6	70.26	96.43

Timing: (in seconds)

	Stimulus:	15	16
	Response:	93	65
RU275	Exercise total:	108	81

Do you think that all scientists wear uniforms?

○ Yes

● No

○ I don't know.

RU245

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

NAEP #: 303085

72-73 Report #: RU245
69-70 Report #: U684

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 05-34
69-70 Package-Exercise: 04-16

72-73 National P-val:
RU245 69.68
69-70 National P-value:
RU245 62.46

Timing: (in seconds)
Stimulus: 6
Response: 9
I don't know: 4
Pause: 6
RU245 Exercise total: 25

Do you think that breaking a mirror brings bad luck?

○ Yes

● No

○ I don't know.

RU246

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 303087

72-73 Report #: RU246
69-70 Report #: U682

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-01
69-70 Package-Exercise: 06-17

72-73 National P-val:
RU246 70.30
69-70 National P-value:
RU246 72.01

Timing: (in seconds)
Stimulus: 5
Response: 15
I don't know: 5
Pause: 5
RU246 Exercise total: 30

Most scientists today are working on space projects.

○ I believe this statement.

● I don't believe this statement.

○ I don't know.

RU247

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 303089

72-73 Report #: RU247
69-70 Report #: U773

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 04-25
69-70 Package-Exercise: 01-07

72-73 National P-val:
RU247 44.83
69-70 National P-value:
RU247 37.86

Timing: (in seconds)
Stimulus: 7
Response: 13
I don't know: 5
Pause: 6
RU247 Exercise total: 31

A Have you done science experiments outside of school, such as those suggested in a chemistry or microscope set?

● Often

○ Sometimes

○ Never

B. If so, what experiment have you done most recently?

____

____

____

RU258

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO

NAEP #: 303090

72-73 Report #: RU258
69-70 Report #: U775

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus professional
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	07-16
69-70 Package-Exercise:	03-18

72-73 National P-val:	
RU258A	5.08
RU258B	34.13
69-70 National P-value:	
RU258A	5.31
RU258B	***

Timing: (in seconds)

	Stimulus:	14
	Response:	6
RU258A	Part total:	20
	Stimulus:	11
	Response:	90
RU258B	Part total:	101
RU258	Exercise total:	121

***Acceptable/Unacceptable data is not available at this time.

Exercise 303090-2; RU 258

A. Have you done science experiments outside of school, such as those suggested in a chemistry or microscope set?

B. If so, what experiment have you done most recently?

00 = no response; have done none recently.

Acceptable

10 = Experiments with pure chemicals alone
Made a little fire cracker with a chemistry set.
Mixed iron filings and sulfer.
We have experimented with sulfer.
Saw how sulfer burns.
Burned sugar in a spoon under a candle.
Made hydrogen with zinc and hydrochloric acid.
We did a stick and smoke bomb.

11 = Experiments with chemicals and something else
Rubberized egg with vinegar.
Saw if things are acid or basic.
Put bacon in acid and saw what happened.

12 = Electrical experiments
Tested battery cells.
Electrical conduction of metals.
Hydrolysis of water.

13 = Experiments demonstrating physical principles
I saw if the mass of ice and water were different, just because they have a different volume. It wasn't. Also fooled with the microscope at home.
Found out if salt in water affects its freezing point.
I tried an experiment to show how friction can be reduced.
Made an egg go into a pop bottle by a match.
In chemistry set they gave me a rocket. I filled the rocket with Alka-Seltzer and water. The pressure building inside the rocket made it shoot upward.

14 = Geological, weather or astronomy experiments
Studied the locations of stars at different times of the year.
Looked at the moon and stars and at Jupiter through a telescope.
We did a balloon to see what the temperature would be.
Made erosion happen.

15 = Examination of life forms, examination of non-living things
I examined a sample of blood through a microscope.
I looked at a lot of slides through microscopes. I dissected a few frogs.
Looked at pond water with a microscope.
Looked at what a bee stinger looks like through a microscope.

Put bugs in a box and let them all live together and saw how many babies they had.
Used plaster of paris and made different kinds of fossils.

16 = Experiments on plants and animals
Tested growth of plants in sun and in the dark, with food and without food.
Effect of heat on seeds.
Tested alcoholic effect on chick embryos.

17 = Other acceptable
Did a test about thermal pollution around the city.

Unacceptable

20 = Vague reference to a science experiment
Rock experiment.
About mice.
I found a fossil once.
The environment.
About one-cell animals.

21 = Other unacceptable
I've mixed milk,marshmallows, cocoa and coconut to see how it tastes - a food experiment.
In school, we went outside of school and searched for many types of insects.
Surveyed Spring Creek Park in science.

39 = I don't know

Science is best described as . . . .

RU2E3

445

STOP

DO NOT CONTINUE
UNTIL TOLD TO DO SO

475

NAEP #: 303091

72-73 Report #: RU253

69-70 Report #: U782

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

72-73 Subobj: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Short answer
Scoring Type: Professional
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	09-33
69-70 Package-Exercise:	08-18

72-73 National P-val:
RP253 ***
69-70 National P-value:
***

Timing: (in seconds)

	Stimulus:	9
	Response:	238
RP253	Exercise total:	247

***Acceptable/Unacceptable data is not available at this time.

Exercise 303091-2; RU 253

Science is best described as ...

Note: Three columns of ovals are needed to score this exercise.

First column of ovals = Number of acceptable categories mentioned. Response range 0-2.

Second column of ovals = category of the first idea.

Imaginary column of ovals = category of the second idea.

Note: When there are more than two categories mentioned, the best two are to be coded.

Categories for 2nd and imaginary columns of ovals:

0 = no response

Acceptable

1 = What can be studied by science.
  A study of plants, animals, rocks and many more.
  The study of all living and non-living things that exist.
  A subject which covers nature, chemistry, biology and almost everything known to man.
  The study of stars, moons and planets and man and his environment.

2 = The scientific method - observation, experimentation (research), making hypotheses, theories.
  A way of finding out things by experimenting.
  A subject for experimenting and finding out the elements.
  A subject that tries to find new things by experimenting to find the answer.

3 = Practical applications of science.
  Also scientists work to make this a better world by finding cures for many diseases.
  Science is the work of smart men; they invent things so they can help the world and people.
  To find out new inventions for the world of today. Also to find cures for sickness that have not been found yet.

4 = Distinction between science and the supernatural.

5 = Qualities of science - logic, quantitative
  An orderly and systematic study of ...
  An accurate and orderly arrangement of known things and forces around you.

Unacceptable

6 = Irrelevant responses (Must be an independent thought); vague responses
  A cool subject. I like it very much because you learn so many things.
  An intelligent man.
  Man's knowledge.

Note: Configuration 060 changed to 999 for I don't know.

A. Do you read books about science or scientists?

● Often
○ Sometimes
○ Never

B. If so, what book have you read most recently?

____

RU248

449
479

STOP DO NOT CONTINUE UNTIL TOLD TO DO SO.

8-303092③4s

A. How often do you read books about science or scientists: often, sometimes, or never?

● Often (Go to B)

○ Sometimes (Go to B)

○ Never (End the exercise)

B. What book about science or scientists have you read most recently?

____

RU248

NAEP #: 303092

72-73 Report #: RU248
69-70 Report #: U870

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
72-73 Subobj: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Science Type: Unclassified

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus professional
Administration Mode: Individual for adults/Group at other ages

Age:		17IS	Adult
72-73 Package-Exercise:		04-07	04-01
69-70 Package-Exercise:		10-14	
72-73 National P-val:			
	RU248A	5.77	9.24
	RU248B	27.87	24.46
69-70 National P-value:			
	RU248A	5.42	
	RU248B	***	

Timing: (in seconds)			
	Stimulus:	8	*
	Response:	5	*
RU248A	Part total:	13	*
	Stimulus:	8	*
	Response:	9	*
RU248B	Part total:	17	*
RU248	Exercise total:	30	*

*Time not limited by paced tape.

***Acceptable/Unacceptable data is not available at this time.

Exercise 303092-3,4s; RU 248

A. How often do you read books about science or scientists?

B. What book about science or scientists have you read most recently?

00 = no response

Acceptable

10 = Astronomy; space exploration

11 = Environment; ecology; pollution; overpopulation

12 = Geology; earth science; weather; oceanography (excluding life forms)

13 = Biology; cells; microorganisms; plants; animals

14 = Human body; medicine; disease; reproduction (human); nutrition

15 = Evolution; genetics; archeology; fossils

16 = Chemistry; physics; electricity; mechanics

17 = Science fiction; new discoveries; things in the future

18 = About scientists; historical scientific events

19 = Other acceptable (Scorers: Do not use this category any more than necessary)
Includes general science textbooks.

- -

Unacceptable

20 = Sociology; psychology (Considered acceptable by some consultants)

21 = Economics; other math topics

22 = Technical manuals - if the one mentioned is not acceptable.

23 = Names a science article in either a magazine or general reference book

24 = Names a science reference book: Merck Index, Handbook of Physics and Chemistry, etc.

25 = Other unacceptable

39 = I don't know.